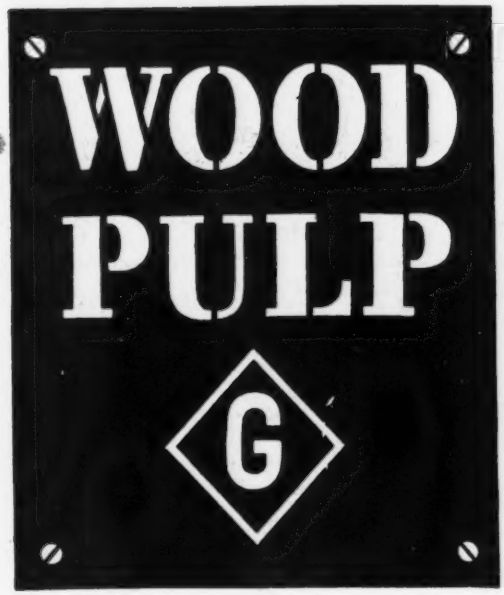
ENGINEERING LIBRARY

APR 30 1948

Paper TRADE JOURNAL

REG. U. S. PAT. OFF.

VOLUME 126, No. 17 APRIL 22, 1948



Established 1886

"Mind is the great lever of all things; human thought is the process by which human ends are ultimately answered."

DANIEL WEBSTER

Transmitting human thought from the minds of a few to the consciousness of millions, Paper will always be civilization's foremost exponent. Intelligent thought, careful planning and foresight —products of the mind—have been the lever and the power which developed the great Pulp and Paper Industry and its products.

GOTTESMAN & COMPANY

— INCORPORATED —

22 EAST 40th STREET • NEW YORK 16, N. Y.

EUROPEAN OFFICES: Birger Jarlsgatan 8, Stockholm, Sweden

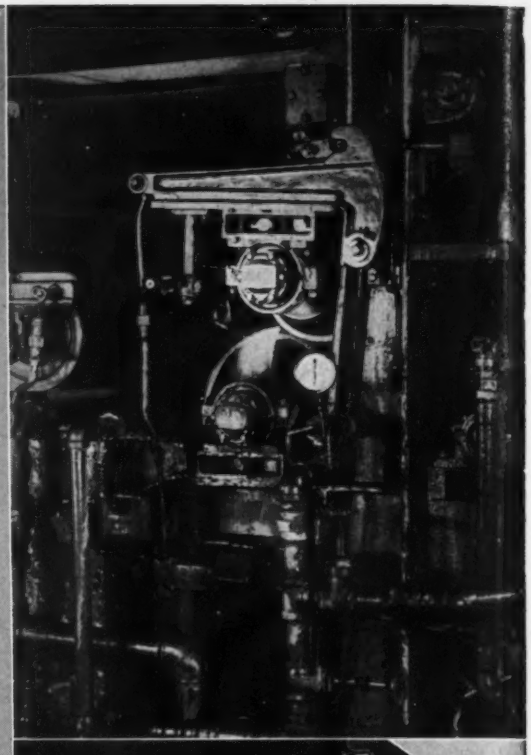
SUCTION-EXTRACTOR

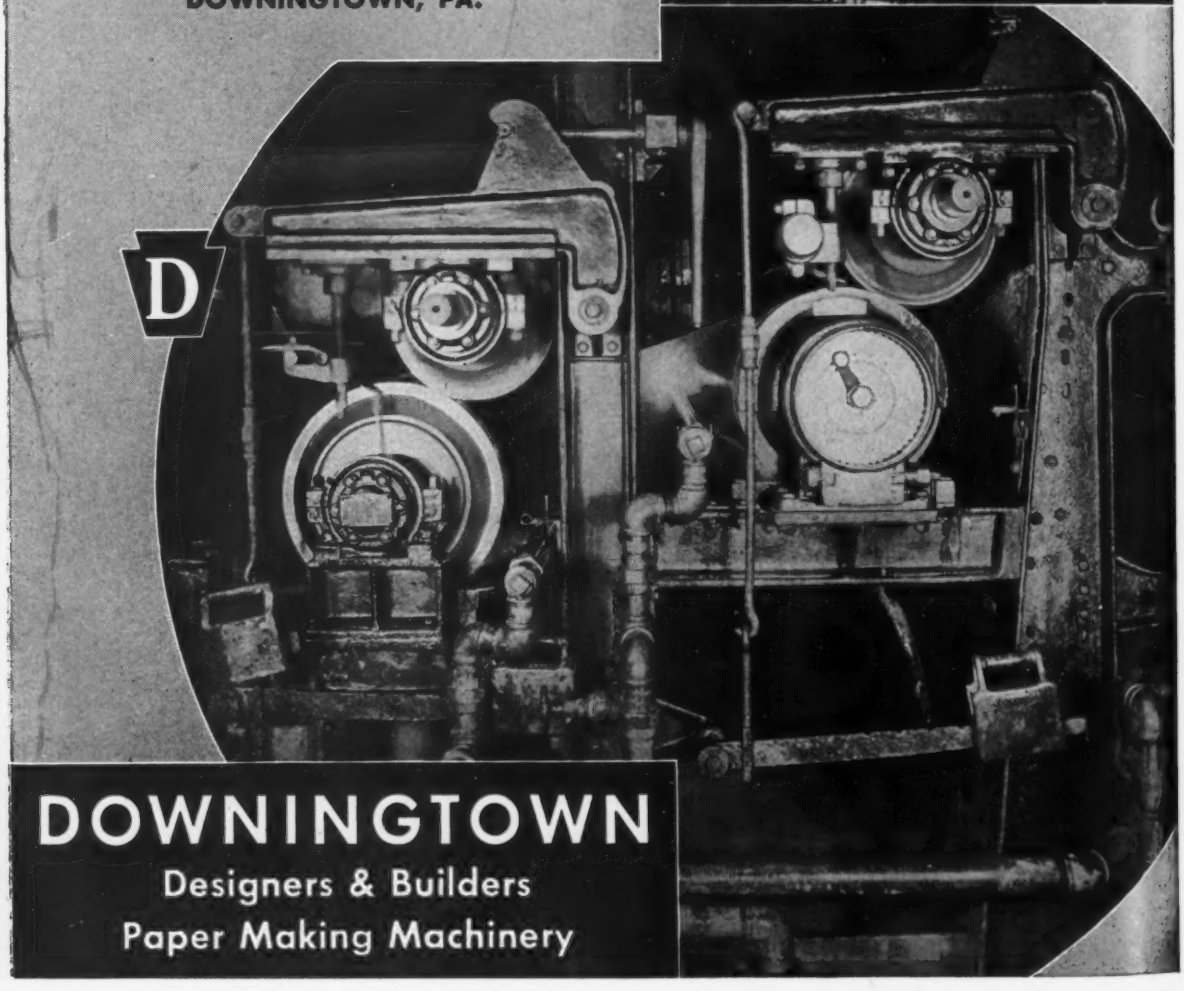
Exclusively

A Downingtown Product

Following the success of the Downingtown Plain Extractor, we went one step farther, with the pioneering and patenting of the Suction-Extractor in 1938. This roll is a combination of the Extractor and the Suction Roll, and gives best results when installed following a plain Extractor, as pictured below. The combination safely removes large volumes of water, compacts the sheet and strengthens it at a point where it is easily pressed. Air bubbles are removed and the layers of the sheet sealed together. Many of the mills that installed a plain Extractor alone, as pictured at right, have since ordered Suction-Extractors. Catalogs on request.

DOWNINGTOWN MANUFACTURING CO.
DOWNINGTOWN, PA.





DOWNINGTOWN
Designers & Builders
Paper Making Machinery

IN THIS ISSUE

APRIL 22, 1948

Newsprint Stocks Sag To 32-Day Inventory .. 9
Westminster Adds To Pulp Capacity 9
Minnesota Mining Raises 5 In Rank 10
C. J. West Heads Appleton Rotary 10
Recommend Removing Jap Soda Ash Plants.. 12
Seek Price Support For Domestic Hemp 12
Parker Sees Threat In Taxation Policy 14
FINANCE 16
International Grants New Wage Contract ... 20
Ontario Unions Hold Wage Policy Parley.... 20
New England TAPPI Discusses Synthetic Rubber Latices 22
IMPORTS 24
TRENDS 26
PRICES 28
MARKETS 30
OBITUARY 32
Mando First Aiders Vie for Honors 34
Vermont's Governor Seeks Victory Dam 37
Gilbert Tells Plans For Industrial Film 38
Lakeview Mill Plays Host To Health Group .. 38
PRODUCTION RATIO REPORT 40
EDITORIAL 41
INDUSTRIAL DEVELOPMENT 43
Pensacola's New Kraft Center Starts Its Wheels Turning 43
New De-Inking Process Claims Many Economical Features 44
Mengel Builds A Box Plant For Maximum Efficiency 45
Dry Spray Method Is Offered To Eliminate Offsetting 46
NEW LITERATURE 48
EQUIPMENT AND SUPPLIES 49
TAPPI SECTION 51
Modern Practice in Sulphite Mill Acid and Recovery Plants 51
Application of Statistical Methods to Paper Testing Procedures 54
United States Patents on Papermaking 59
CLASSIFIED ADVERTISING 64

INDEX TO ADVERTISEMENTS ON PAGE 80

Volume 126 — Number 17

Paper TRADE JOURNAL
REG. U. S. PAT. OFF.

Executive and Editorial Offices: 15 W. 47th St., New York 19, New York
Published Every Thursday by Lockwood Trade Journal Co., Inc.

GEO. E. LOCKWOOD, *President & Treasurer*
ARTHUR E. GORDON, *Vice-President*
JOSEPH P. HORGAN, *Secretary*

W. L. COOK, *Editor*
E. P. MCGINN, *Industrial Editor*

E. P. NUTTALL, *Assistant Editor*
R. G. MACDONALD, *"TAPPI" Editor*
F. B. GROSSE, *Production Manager*

Eastern Representatives

BRUCE E. BROWN
15 W. 47th St., New York 19, N. Y.; Phone PLaza 7-2370
EDWARD H. DOERING
15 W. 47th St., New York 19, N. Y.; Phone PLaza 7-2370

Pacific Coast Representatives

ROY M. MCDONALD & CO.
San Francisco, 4, Cal., 564 Market St.; Phone YUkon 6-0503
Los Angeles, 5, Cal., 639 S. Wilton Pl.; Phone Drexel 2590
Seattle, 1, Wash., Terminal Sales Building; Phone Main 3860

Mid-Western Representatives

H. K. VINTON
30 N. Dearborn St., Chicago 2, Ill.; Phone Central 2784
FRANKLYN H. OLSEN
1674 Sunview Rd., South Euclid, Cleveland, 21, Ohio; Phone Hillcrest 1124-W

Southern Representative

EDWARD M. BUCK
1000 Main St., Dallas, Texas; Phone Riverside 5625

Representative for Denmark, Norway, Sweden and Finland

OXFORD TRADING AKTIEBOLAGET
Bibliotekgatan 6-8, Stockholm, Sweden

Subscriptions: (Payable in advance) By the year, $5.00; Single Copy, 15 Cents. *Postage Extra: To Canada, $2.00; To Other Foreign Countries, $3.50.* Member Audit Bureau of Circulation.

PAPER *established Feb. 17, 1899, combined with* PAPER TRADE JOURNAL, *Nov. 16, 1899.* PAPER *established Sept. 21, 1910, combined with* PAPER TRADE JOURNAL, *Feb. 19, 1926. All rights to the above titles reserved.*

PAPER TRADE JOURNAL *is entered as Second Class matter at the Post Office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 N. Crystal St., East Stroudsburg, Pa. Printed in U. S. A.*

Copyright 1948 by the Lockwood Trade Journal Company, Inc. The contents of PAPER TRADE JOURNAL, *including all articles, illustrations, etc., are covered by copyright and may not be reprinted except by permission.*
PAPER TRADE JOURNAL *is indexed in Industrial Arts Index.*

CALENDAR OF COMING EVENTS

April 28-29—National Paperboard Association Spring Meeting, Seaview Country Club, Absecon, N. J.

May 9-12—National Paper Box Manufacturers Association, Annual Convention, Cincinnati, O.

May 19, 20, 21, 1948—American Pulp and Paper Mill Superintendents Association, Annual Meeting, Roosevelt Hotel, New Orleans, La.

June 11-12, 1948—Paper & Twine Association, Annual Convention, French Lick Springs, Indiana.

HYCAR AMERICAN RUBBER LATEX...
imparts valuable properties to pulp and paper

HYCAR latex added directly to the pulp in the beater or head box, or used as an impregnant for paper, imparts valuable properties not otherwise readily obtained.

Tear and wet strength are considerably increased. Resistance to oils, solvents and chemicals is obtained, with retention of good aging properties. The addition of Hycar also insures excellent flex life and scuff resistance, and in thick papers prevents separation of the laminations.

Thus, better physical properties may be obtained in high grade pulp. In other cases the use of lower grade stock may be permitted because of improved physical properties obtained by the use of Hycar latex. Paper is made adaptable to fields where it is not now used.

Present and potential applications for papers of this sort range from wallpaper to insoles, from gaskets to leather replacement material, from shelf liners to packaging papers.

HYCAR latex is very easy to use. In most applications no vulcanization is required. Normal drying times are used. And HYCAR latex is an inherently safe material to handle. *No solvent system is needed.*

We would be glad to work with you on any problems relating to the use of HYCAR latex. For more information, please write Department HJ-5, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio.

Hycar
Reg. U. S. Pat. Off.
American Rubber

B. F. Goodrich Chemical Company
A DIVISION OF THE B. F. GOODRICH COMPANY

Paper Comes to the Schoolroom

Only fifty years ago in millions of grade and country schools, children were doing their sums and composing their sentences on slates. Then, as more and more paper mills sprang up to make paper from wood, their product —low cost and plentiful paper—began to change the methods and the minds of America.

No symbol of that change was more significant than the passing of the slate, the coming of the tablet, pad and notebook, followed by free textbooks. The stimulus to the advancement of education was profound.

Today, children and youths in more than 213,000 schools and colleges write their lessons, their reports, their theses on paper. Today, libraries in every community make available for all, the accumulation of the world's great thinking. Paper, plentiful paper, has set minds free through knowledge, has brought the opportunity for culture to every home.

The dramatic story of paper is told in the sound-and-color film, "Paper — Pacemaker of Progress," and in a book under the same title. Both are presented by F. C. Huyck & Sons as a tribute to the Paper Industry. The book will be sent free upon request.

F. C. HUYCK & SONS • *Kenwood Mills* • ALBANY, NEW YORK

KENWOOD WOOL PRODUCTS

HUYCK *Felts*

PAPER · · · America's 6th Industry

CENTENNIAL SPOTLIGHT 1848-1948
In this 100th anniversary year as Machine Builders for the Paper Industry, Puseyjones points with pride to outstanding post-war installations. In the spotlight . . . 112" Four-Cylinder Specialty Board Machine for Crocker-Burbank Association, Fitchburg, Mass.

COOKING WITH PAPER

(NEWS ITEM: *Cooking meals in paper eliminates unpleasant cooking odors and makes food richer, more healthful and more delicious.*)

Fastidious homemakers, particularly apartment dwellers, welcome the modern method of cooking that does away with cooking odors and makes meals more delicious. The secret is parchment paper. Food is prepared and placed in the center of a moistened sheet of paper. Corners are gathered and tied to form a bag. Contents are cooked as usual—minus telltale odors of cabbage, onions, fish, etc. Two-burner stove users can cook two or three separately wrapped foods in the same pan of water. Manufacturer's name on request.

Paper clotheslines . . . paper bags to package ice . . . polishing paper for silver . . . new uses for paper calling for new standards of lightness and toughness, new standards of quality in performance. New responsibilities—new opportunities for the Pulp and Paper Industry.

The Puseyjones Organization is now devoting itself completely to the design and construction of Paper-Making Machinery built to new high standards of speed and efficiency, and to the modernization of existing machines. Additional capacity in Metals Fabrication is now available through conversion of facilities formerly devoted to the building of ships.

Puseyjones Engineers will welcome the opportunity to work with you in solving production problems.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington 99, Delaware, U. S. A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

Paper TRADE JOURNAL

VOL. 126, NO. 17 REG. U.S. PAT. OFF. APRIL 22, 1948

Newsprint Stocks Sag To 32-Day Inventory

NEW YORK—Stocks of newsprint on hand and in transit at the end of March 1948 declined to 32 days supply for daily newspapers reporting to the American Newspaper Publishers Association. This represents a decrease of 2 days supply compared with stocks on hand at the end of February 1948. Stocks of 32 days at the end of March compare with 29 days at the end of March 1947; 29 days at the end of March 1946 and 46 days at the end of March 1945. Stocks on hand and in transit include a considerable amount of tonnage brought in by water in the summer, use of which by some newspapers is spread through the winter months.

Daily newspapers reporting to the ANPA consumed 338,337 tons of newsprint in March 1948 compared with 302,672 tons in March 1947 and 267,711 tons in March 1946. This was an increase in March 1948 over March 1947 of 11.8 percent and an increase over March 1946 of 26.4 percent,

The total estimated newsprint consumption in the United States for March 1948 was 442,217 tons which includes all kinds of uses of newsprint. For the first three months of 1948 it is estimated to be 1,227,239 tons. During the first three months of 1948 the reporting newspapers used 938,838 tons of newsprint, an increase of 13.5 percent over the first three months of 1947 and an increase of 31.9 percent over the first three months of 1946.

Monadnock Mill Passes To New Ownership

MANCHESTER, N. H. — Gilbert Verney, textile mill executive, has purchased Monadnock Paper Mills in Bennington from the estate of Colonel Arthur J. Pierce. Mr. Verney would not disclose the sale price, but said it was "more than a million dollars."

Mr. Verney disclosed that the transaction included the 46-year-old paper mill, Colonel Pierce's estate and 15 colonial-style company homes.

The firm makes quality paper for personal and industrial use. The company employs 75 on three shifts, but Mr. Verney said he expected to increase the payroll to 150 within a year by putting back into operation a papermaking machine which has been idle for some time.

All Roads Lead To New Orleans

NEW YORK—For those who have inquired of him the best routes to New Orleans from eastern and midwestern centers at the time of the convention of the American Pulp and Paper Mill Superintendents convention, beginning May 19, Secretary George W. Craigie has secured recommended routes from the American Automobile Association. They are shown below, with mileage figures supplied to PAPER TRADE JOURNAL by the Socony-Vacuum Touring Service. The mileage given in each case is that from the starting point in New York or from Chicago.

From New York:

Holland Tunnel to Jersey City Newark, New Brunswick	30.
Route 30 to Camden, Pennsville, N. J.	126
Ferry to Newcastle, Del.	
Route 40 to Baltimore, Md.	191
Route 1 to Washington, D. C.	236
Bridge across Potomac River	
Route 50 to Centerville, Va.	258
Route 211 to Newmarket, Va.	334
Route 11 to Lexington, Natural Bridge, Bristol, Va.	609
Route 11E to Knoxville, Tenn.	739
Route 73 to Maryville, Tenn.	755
Route 33 to Ocoee, Tenn.	820
Route 64 to Chattanooga, Tenn.	860
Route 11 to Birmingham, Tuscaloosa, Meridian and New Orleans	1371

From Chicago:

Route 66 to Bloomington, Ill.	120
Route 51 to Decatur, Cairo, Ill., Jackson, Miss., New Orleans	800

Lowell Textile Would Add Paper Curriculum

Boston, Mass.—Addition of paper and leather technology to the curriculum of Lowell Textile Institute at a cost of $1,500,000 was called for here recently.

President Kenneth Fox told the Legislative Committee on Education that the school now operates at more than 50 per cent over capacity and the proposed program would more than double the present capacity of 400.

A $1,000,000 state bond issue to refinance construction of two dormitories was urged by Trustee Samuel Pananski.

He said the construction now is being financed by the institute on a self-liquidating basis, and that state credit would save up to $66,000 over a 20-year period.

Westminster Adds To Pulp Capacity

NEW WESTMINSTER, B. C.—Groundwood pulp paper is being produced at the new $275,000 plant of the Westminster Paper Company Ltd., at the foot of Twentieth Street. This is the first pulp mill in the Fraser Valley territory, and is designed to supply the basic pulp content for the various grades of tissues, papers, wrappers and labels manufactured by the big paper mill of the city firm. The output of the new department will be about 25 tons of groundwood paper a day.

Construction of the separate plant and installation of the elaborate machinery has been under way for some months. In the presence of company officials and engineers, the first full-dress test run took place recently.

Sticks of hemlock were transformed into a soupy brown pulp and then pressed and rolled into pulp paper.

"We are making further tests to get the correct consistency and tensile strength of the paper and will shortly be in production on a 24-hour basis," said E. M. Herb, president.

The entire output will be used to supply the paper mill in New Westminster, with surplus shipped to the allied paper mill at Bellingham.

A crew of about 30 men will operate the department on three shifts. The local men are receiving instruction in operating the new plant.

Hemlock and spruce edgings and slabs from district mills form the raw material for the pulp mill. The plant occupies a new concrete brick structure 60 feet square and two stories high at the foot of Twentieth Street.

A sawing shed cuts the cordwood into short lengths for the belt conveyor into the mill, to be fed into a battery of four huge three-pocket grinders.

The wood is stuffed into cylinder compartments and steam pressure forces the wood against whirling grinding stones. The pulp is washed into a concrete collecting trough and then forced through a preliminary screening process. Pipes take the pulp to a huge concrete tank and thence to a second pressure screening and cleaning process when it is ready for the cylinder machine which presses out the water and forms the paper. Vacuum devices also draw out the water content. The pulp paper comes out in a roll ten feet wide.

A bleaching machine will be installed shortly to turn the pulp paper from its natural pale brown color to a clear white.

Minnesota Mining Raises 5 in Rank

WAUSAU, Wis. — Directors of the Minnesota Mining and Manufacturing Company, meeting last week in St. Paul, Minn., elected five new vice-presidents. The company has extensive quartzite operations here.

J. A. Borden, Bert S. Cross, J. C. Duke, Arthur E. Eggert and Evan C. Lawrence are the newly-elected officers.

Borden, who has been with the company 23 years, will head the tape division, where he has been sales manager for seven years. Heading the abrasive division will be J. C. Duke, who has been merchandising these products for seven years. He has been with the company since 1921. Cross will be in charge of the "Scotchlite" division, in which he has been active in development and sales. He joined the company in 1926.

Lawrence, who has been director of personnel administration for five years, will continue as staff head. Eggert, formerly director of public relations, will assume broader responsibilities in expanding the company's public relations program.

H. R. Murdock Receives The Murdock Medal

TOKYO—Representatives of the Japanese pulp and paper industry last month awarded Harold R. Murdock, past vice-president of the Technical Association of the Pulp and Paper Industry, and formerly director of research for the Champion Paper and Fibre Company the first Murdock Medal. Mr. Murdock is the head of the pulp and paper branch of SCAP's Natural Resources Section.

The award was made in recognition of Mr. Murdock's help in re-establishing the paper industry in Japan and introducing the semi-chemical process which increased the yield of woodpulp by 35 percent. He also established a rayon pulp plant having monthly yields of 4000 tons. Another process introduced by Mr. Murdock was the use of infusorial earth to check difficulties caused by pitch from the pulpwood. Locally procured volcanic ash served this purpose. He also organized the Japanese Technical Association of the Pulp and Paper Industry.

Baker Elected to U. S. Chamber Directorate

BUFFALO, N. Y. — Melvin H. Baker, president of the National Gypsum Company, has been elected to the board of directors, United States Chamber of Commerce. Mr. Baker will represent the Second District comprising New York, New Jersey, Pennsylvania and Delaware. He was president of the Buffalo Chamber of Commerce for two terms in 1939 and 1940.

CLARENCE J. WEST

Catlin Proposes U. S. Subsidize Research

NEENAH, Wis. — Governmental subsidization, federal or state, to enable colleges and universities to train more men for research was advocated April 14 by John Catlin of Kimberly-Clark Corporation in a talk before the Kiwanis club at the Valley Inn.

He said that industry can ill afford to spend money for training fundamental research scientists. He spoke on "Industrial Research's Relation to Community Prosperity" and said that a firm's contribution to the income of a community is based on its research.

Catlin, who is employed in the research and development laboratories of the corporation, traced the development of research in one mill, the Badger Globe, from 1872 when it produced two tons of rag print paper daily, through today with its five modern high speed crepe wadding machines, producing 80 tons a day and employing 600 persons with a gross income of about $8,000,000. "That is industrial research at work," he said.

Trimbey Named Delegate To Rotary Convention

GLENS FALLS, N. Y. — Edward J. Trimbey, proprietor of the Trimbey Machine Works, has been elected as a delegate to 39th annual convention at Rotary International to be held at Rio de Janeiro from May 16 to 20. Several thousand Rotarians and members of their families are expected to attend the convention, the first held by the organization south of the equator. During the trip Mr. and Mrs. Trimbey will visit St. Thomas in the Virgin Islands, Port of Spain, Trinidad and Bahia, Brazil.

C. J. West Heads Appleton Rotary

APPLETON, WIS.—Clarence J. West, Editor of The Institute of Paper Chemistry, has been elected President of the Appleton Rotary Club; he will assume office July 1. He will succeed Leonard Smith, Manager of the Appleton mill of Consolidated Water Power and Paper Company. Dr. West is known to the paper industry through his compilation of the Bibliography of Pulp and Paper Manufacture, of which three collective volumes (1900-1928, 1928-1935, 1936-1945) and the annual volume for 1946 have been issued. He has been Chairman of the Committee on Bibliography of the Technical Association since 1923.

The new Vice-President is James Wagg, who will be remembered by his friends in the industry as having been Superintendent of Strathmore Paper Company and American Writing Paper Corporation. At present Mr. Wagg is a member of the Appleton Water Works Commission and Chairman of the Rent Control Board.

Construction Is Begun On Forestry School

VANCOUVER, B. C. — Contract has been placed by the B.C. Forestry Department for the construction of the first unit of the forest rangers' school building at the Green Timbers Forest Station on the Pacific highway near New Westminster, B. C.

The work, which will cost approximately $57,000, will be handled by the Allport Building Co., Ltd., 6137 Granville Street, Vancouver.

An immediate start is to be made on the project, which was designed by Architects Sharp & Thompson, Berwick, Pratt, 626 West Pender Street, and includes an office, classroom, workshop, garage and boiler room. Buildings are to be one-story high, of frame with cedar siding exterior. School portion will measure 90 by 40 feet and the workshop section, 72.6 by 30.6 feet.

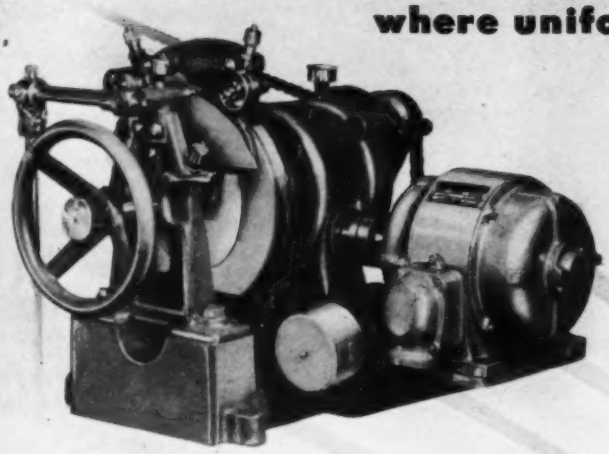
Hostetter Joins American Foresters

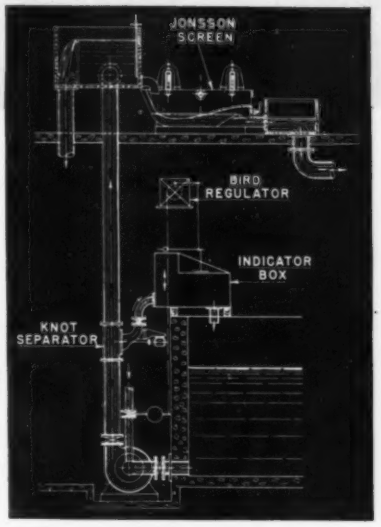
WASHINGTON, D. C. — Robert D. Hostetter of Guntersville, Ala., has been appointed assistant executive secretary of the Society of American Foresters effective May 1. He will serve as assistant to Henry Clepper, who has been executive secretary of the Society since 1937.

A native of Kansas, Hostetter was graduated in forestry in 1941 from Colorado A & M College, and two years later obtained the master of forestry degree from Duke University majoring in forest economics.

Since June 1943 he has been employed as forester by the Reservoir Properties Division of the Tennessee Valley Authority. For two years during 1944-1946 he was on military leave serving as a naval officer in the Pacific theatre.

Think of all the places in *Your* mill where uniform stock consistency would result in better operation at lower cost





AT THE KNOTTERS, FOR EXAMPLE

Here's one of the many useful and profitable applications of the Bird Consistency Regulator — at a Jonsson Screen to assure maximum efficiency of the knotting and pulp screening operations.

Now, with the Bird Consistency Regulator, there's no longer any excuse for operating with wrong or fluctuating consistencies anywhere along the line — at machine chests, stock chests, Jordans, knotters, brown stock washers, deckers, or wherever.

The Bird Regulator handles all kinds of stock, free or slow. It maintains consistency at whatever is desired, whether less than 1% or as high as 12%. Variations never exceed 0.1% heavier or lighter than desired. You just set it and forget it.

There are lots of places in your mill where this Regulator will pay for itself over and over. Better look into it.

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

Recommend Removing Jap Soda Ash Plants

Washington, — Japanese soda ash plants above those necessary to meet minimum home requirements have been earmarked for use as reparations to other countries by an American technical group which has just reported on these and other Japanese chemical industry installations.

The report of this survey has had only limited circulation, but abstracts of it pertaining to soda ash, sulphuric acid, electrolytic caustic soda-chlorine plants and others indicate that substantial portions of the Japanese war-expanded chemical industry may become subject to removal for satisfaction of claims of other nations.

The report recommends retention in Japan of 300,000 tons' capacity of soda ash, leaving an excess of equipment representing 450,000 to 500,000 tons per year available for removal under this proposal.

It is recommended that electrolytic caustic soda-chlorine plants in excess of an overall capacity to produce 44,000 tons of caustic soda and 40,000 tons of chlorine annually be removed as reparations. This would mean making available capacity for about 195,000 metric tons of caustic soda and 175,000 metric tons of chlorine annually, for removal.

Methanol plants approved for conversion to ammonia production would be retained for use in Japan.

No suggestion as to which nations might participate in distribution of these plants was noted in portions of the report considered here. Allocation of these plants to countries now attempting to build up self-sufficient industries in paper and related products might have a long-range effect on United States interests, but the report does not go into this phase of the matter.

Consolidated Office Votes for AFL

Wisconsin Rapids, Wis.—The office and clerical employes of Consolidated Water Power and Paper Company voted April 15 in favor of a union shop policy requiring membership in Local 95, Office Employes' International Union (AFL). The vote was 75 to 12. The election was supervised by a representative of the Minneapolis regional office of the National Labor Relations Board.

National Folding Box Grants Wage Scale Hike

New Haven, Conn.—A five percent wage increase for approximately 900 employes of the National Folding Box Company, here, has been announced by Vice-president James C. Lagua. The increase, retroactive to April 5, resulted from negotiations between the management and two unions which represent a majority of the plant's production workers, he said.

A spokesman for one of the unions said the increase would range from six to eight cents an hour.

Members of the two unions—Local 463, United Paper Workers of America, CIO, and Local 508, New Haven Paper Box Workers Union, an affiliate of the International Printing Pressmen, AFL—have voted to accept the new wage agreement.

New England Unions Plan Wage Scale Meetings

Holyoke, Mass.—Local 226 of the Paper Mill Workers Union, AFL, will hold a meeting shortly at which time a draft will be made for a new wage scale for the next twelve months.

The gathering is to be followed shortly by a meeting of the members of the Eagle Lodge of Papermekers, when a similar draft will be made by that orginization.

Representatives of the two units, headed by International Organizer Edward M. Moore, will then meet with the manufacturers' labor representative, Harold A. Martin, to open joint negotiations for a new contract.

Moore stated that a pay increase would be sought by the mill hands. The present contract calls for wages starting at 89½ cents an hour and going to $1.37 cents an hour. Moore said that he doesn't expect any change in demands for working conditions or for paid holidays and vacations.

Badger Mills Fire Fails to Halt Output

Peshtigo, Wis.—Damage estimated at $20,000 was caused by a fire at the Badger Paper Mills, Inc., April 15. The mill's fire brigade brought the flames under control shortly after the blaze was discovered, and the village volunteer firemen added their efforts to those of the company's firemen in putting out the blaze.

Sparks from the furnace were believed to have ignited the steam plant roof and the fire spread to the coal conveyor housing. The damage was confined to the steam plant and the coal conveyor units. There was no loss of production.

Dexter Fire Held to Minimum Loss

Dexter, N. Y.—A fire of unknown origin which threatened 12,000 cords of pulp wood at the Dexter Sulphite Pulp & Paper Company recently was confined to a loss of eight cords by quick work of three fire departments. Discovery of the fire was made by an employe of the Dexter mill who observed flames on the top of the 40-foot high pile of wood located in the yard in Factory Street.

Seek Price Support For Domestic Hemp

Washington.—A price support program for American-grown hemp, largely expanded as a result of the last war, was asked in connection with the national defense measures now being considered by Congress, by Representative Frank B. Keefe, of Wisconsin, in the House last week.

The proposed price support would be designed to encourage the domestic growing of hemp as a backstop against possible loss of the Philippine hemp, and jute, or related fibers from India, in event of a new war or civil disturbances.

Domestic hemp acreage was expanded to 185,000 from 3,000 acres in 1943, and a handful of pre-war processing plants was expanded by 42 additional plants during the war. The war-built plants, costing over $300,000 for six or seven in Iowa alone, were declared surplus, and 32 have been sold, according to Rep. Keefe, at a fraction of their cost to the Government. Only one plant is said to be now processing the domestically-grown hemp.

Price support was extended to the American crop as late as 1946, but it was then selling above the support level. Rep. Keefe, and representatives of growers, are asking legislation establishing price support for the 1948-49 crop at the following level; line, 15 to 29 cents according to grade; tow, 8 to 14 cents according to grade.

The remaining war-surplus fiber held by the Government was dumped after the war, Rep. Keefe recalled, and has hung over the market for future crops.

Union Bag & Paper Plays Host to 65

Hudson Falls, N. Y.—About 65 employes of the Union Bag and Paper Corporation were guests of honor at a banquet during the past week at which they were presented service awards. Employes honored were those who have served 10, 15 and 20 years. True M. Avery, vice-president, was the principal speaker and tendered congratulations to the veteran employes upon their long and faithful service. Following Mr. Avery's greeting, P. Fay, resident manager, offered his congratulations and emphasized the need for such experience as possessed by the group present in the practical development of new products; new fields in packaging enabling the firm to retain its dominant position in the paper industry. Among the superintendents introduced to the guests were Henry Driscoll, Robert Fresh, Lawrence Ross, William Stark, Allan Nickerson, Sylvester Sullivan and Clarence McIntire. Allen Jones served as toastmaster.

ARMCO'S NEW "ELC" RESISTS CORROSION

HERE

Now you can save money and avoid future service troubles by specifying the new ARMCO Stainless Steel Type 316 ELC (Extra Low Carbon) for your welded processing equipment.

Annealing after welding is no longer necessary to prevent intergranular corrosion. Type 316 ELC staunchly resists corrosive attack near the welds when your wet processing equipment is in service. The reason for this is that this special-purpose new ARMCO Stainless Steel has a *maximum carbon content of .03%*.

Heretofore, in certain kinds of paper-making equipment, the excellent corrosion resistance of Type 316 has been safeguarded by adding columbium as a carbon-stabilizer.

Now the low carbon content of ARMCO Stainless Type 316 ELC accomplishes the same purposes—*at less cost.*

This new grade is ideal for welded equipment exposed to corrosive conditions at temperatures below the sensitizing range. It can be used to advantage in acid bleaching equipment, blow pit bottoms, blow pit target plates, acid digesters, inlet manifolds, screen plates and size cookers (resin).

Get more information about ARMCO "ELC" Stainless Steel. Find out how you can take advantage of the special corrosion-resistant properties of this stainless steel. Just fill in and mail the handy coupon. Or ask your equipment fabricator to inquire about ARMCO "ELC". The American Rolling Mill Company, 137 Curtis Street, Middletown, Ohio.

Export: The Armco International Corporation

ARMCO STAINLESS STEELS

ARMCO

MAIL TODAY FOR ELC DATA

The American Rolling Mill Company
137 Curtis Street, Middletown, Ohio

We make_____

Sizes Required_____

Special Requirements_____

Send us prices of Type 316 ELC_____

Name_____ Title_____

Company_____

Street Address_____

City_____ Zone____ State_____

Ohio TAPPI Elects P. S. Cade Chairman

Middletown, Ohio.—The Ohio Section of the Technical Association of the Pulp and Paper Industry held its meeting at the Manchester Hotal on April 9, 1948. Except for the business meeting, the entire evening was devoted to an informal get-together. Prior to the dinner the 165 individuals who attended were guests of the Black-Clawson Company at a cocktail party and following the dinner entertainment was provided by a professional theatrical company.

The officers elected for 1948-49 were as follows: Chairman, P. S. Cade, Harding-Jones Paper Company; vice-chairman, Arthur Thurn, Champion Paper and Fibre Company; recording secretary, H. A. Smith, Mend Corporation; corresponding secretary, S. R. Holmes Gardner-Richardson Company; and treasurer, R. D. McCarron, Stein-Hall Company. Executive Committeemen elected were: D. M. Yost, Sorg Paper Company; C. D. Roess, Wrenn Paper Company; K. P. Geohegan, Howard Paper Mills; H. H. Harrison, Crystal Tissue Company; and E. C. Hendrickson, Mead Corporation.

Those who attended included: C. N. Mill, S. W. Blanchard, M. L. Barker, G. H. Suhs, D. E. Wordward, C. R. Merriman, W. H. Boast, John Dow, B. J. Koziol, J. H. Pearson, G. T. Stahl, E. C. Hendrickson, T. Hieronymus, J. Clouse, A. A. Dencke, C. L. Gebhardt, C. A. Miller, Robert Wildon J. R. Carney, C. D. Wise, J. L. Vanderberg, W. J. Carroll, V. A. Yost, G. A. Balko, Art Coffin, L. R. Kendall, R. R. Crawford, W. E. Bailey, R. G. Kutter, S. T. Weber, J. J. Fiori, A. M. Hart, E. B. Janvrin, J. J. Fiori, Jr., A. S. Bouess, R. J. MacMeekin, R. R. Weber, Val Friedrich, Jr., A. H. Frazer, William Reigers, Harold C. Leighton, Paul Zimmerman, John Burnatt, T. L. Stirling, S. B. Early, A. W. Griffith, V. J. Wirpsa, J. W. Heck, T. E. Jones, Jr., H. W. Laymon, C. D. Roess, G. A. Young, B. N. Morriss, S. W. Trosset, L. W. Whal, J. G. Redmond, E. L. Gandin, Fred Hold, Paul C. Miller, R. A. Hahn, Frank Martin, J. W. Jelks, E. H. Ellis, W. W. Trunnel, D. W. Newell, R. B. Goble, G. K. Losher, Douglas Robbins, P. H. Schaller, James Combie, Frank Marstall, H. F. Bennett, D. S. Brown, W. H. Owens, A. G. Gibson, G. S. Sharpe, R. T. Petrie, J. R. Simpson, G. R. Ryden, Bert Tillmann, Leo Geeser, R. Stephenson, R. L. Betts, H. W. Zimmerman, J. E. Burdall, W. M. Bevis, R. N. Johnson, F. C. Darall, J. C. Davidson, O. W. Hein, G. C. Bauer, F. Scharringhausen, W. P. Gillen, Bill Biven, J. B. Gorigs, S. R. Price, Jr., T. Agronin, G. Crawford, W. A. White, H. J. Abernathy, E. Zuehlke, J. A. Hoerner, Joe Hunter, R. P. Honeywill, Paul Howard, R. J. Purdy, J. A. Ramu, Roy Lawson, G. E. Thompson, J. E. Schuster, C. H. Waldhauer, Charles Callaborn, L. C. Currier, C. J. Wright, W. A. Thomas, J. F. Stevenson, Phil Shick, H. G. Palmer, R. L. Jenk, C. E. Ahlm, F. E. Moser, D. T. Dineen, Charlie Moore, Leon Tyder, P. M. Schaffrath, T. Q. Holden, J. H. Tate, W. O. Gutxwiller, S. J. Porter, F. L. Zellers, W. P. Petzold, W. W. Macklem, R. M. Buechler, J. C. Redd, S. E. Knowles, D. E. Shook, C. L. Haynes, H. A. Smith, C. A. Mohler, H. T. Hixon, B. P. Bunch, W. J. Wachter, A. C. Groom, S. N. Bazler, J. M. Fisher, E. W. Brennan, Art Thurn, Kon Matchuk, R. D. McCarron, E. B. Brookbank, P. S. Cade, Don Goodman, C. E. Brandon, J. H. Moyer, E. O. Knapp, H. C. Koch, Edward Lum.

Expect to Progress on Duncan Bay Mill

VANCOUVER, B. C. — Plans of the Canadian Western Timber Company for the erection of a $30 million pulp and paper mill at Duncan Bay are likely to be proceeded with. R. J. Filberg, president of the company, states that the plans would have been scrapped if the B.C. government refused to issue a forest management license to the firm. However, speaking in the B.C. Legislature, the Hon. E. T. Kenney, Minister of Lands for British Columbia, indicated that the desired license was likely to be granted.

The company has applied for a license covering 200,000 acres on the east coast of Vancouver Island and on an island in Johnstone Strait. The application has been opposed by the B.C. Truck Loggers' Association.

Parker Sees Threat In Taxation Policy

APPLETON, Wis.—Continued government intervention in the fields of private industry, with higher taxes on the income of individuals, can only mean the ultimate destruction of the opportunities which exist in our present system, Cola G. Parker, president of the Kimberly-Clark Corporation, told the members of the Lake States Section of the Technical Association of the Pulp and Paper Industry at the American Legion clubhouse last week.

Parker declared that as taxes increase the investment sources required for expanding industry dry up and more individuals are taken out of private productive effort to administer government intervention.

"If we look to government for security, it inevitably means paternalism," he said, "the ultimate effect of which is to destroy not only individual self reliance, but also to eliminate that urge of all good business to build its strength which means job security to all those connected with it."

Pointing out that profit is not an unholy thing, but merely the rent necessary to be paid for the tools with which industry produces finished goods, Parker declared that there are two forces constantly at work endeavoring to limit, if not altogether eliminate profits.

"Directly there is the demand for constantly increased distribution of benefits for personal service, either in the form of direct wage payments or indirect allowances recently called 'fringes.' It is a part of our system and I would not have it eliminated. To the extent that industry can lower costs through better tools, more tools, improvement in methods and processes, it is quite proper that the savings be divided between the public in the form of lower prices, the workers in the form of higher pay, and to the owner of tools for the contribution they have made."

The other force, government taxes, Parker called "infinitely more dangerous." "It has been demonstrated that the ultimate effect of a constant increase in the government take can only

(Continued on page 22)

OHIO TAPPI GATHERS FOR ITS ANNUAL DINNER
(Left to right) Art Thurn, Kon Matchuk, R. D. McCarron, E. B. Brookbank, P. S. Cade, Don Goodman, C. E. Brandon, J. H. Moyer, E. O. Knapp, H. C. Koch, Edward Lum.

THE CHEMIPULPER

as used with the

ASPLUND DEFIBRATOR

Now you can get CONTINUOUS PRODUCTION

of CHEMICAL and SEMI-CHEMICAL PULPS

from hard woods . . . soft woods . . . mixed woods. Pulps for paper and paper board, .009 board and dry felts. Suitable for straw, bagasse, etc.

Ask for Catalog

The Answer to Continuous Cooking

The B-K Reaction Chamber is made in units and the number of these can be varied according to the degree of treatment required.

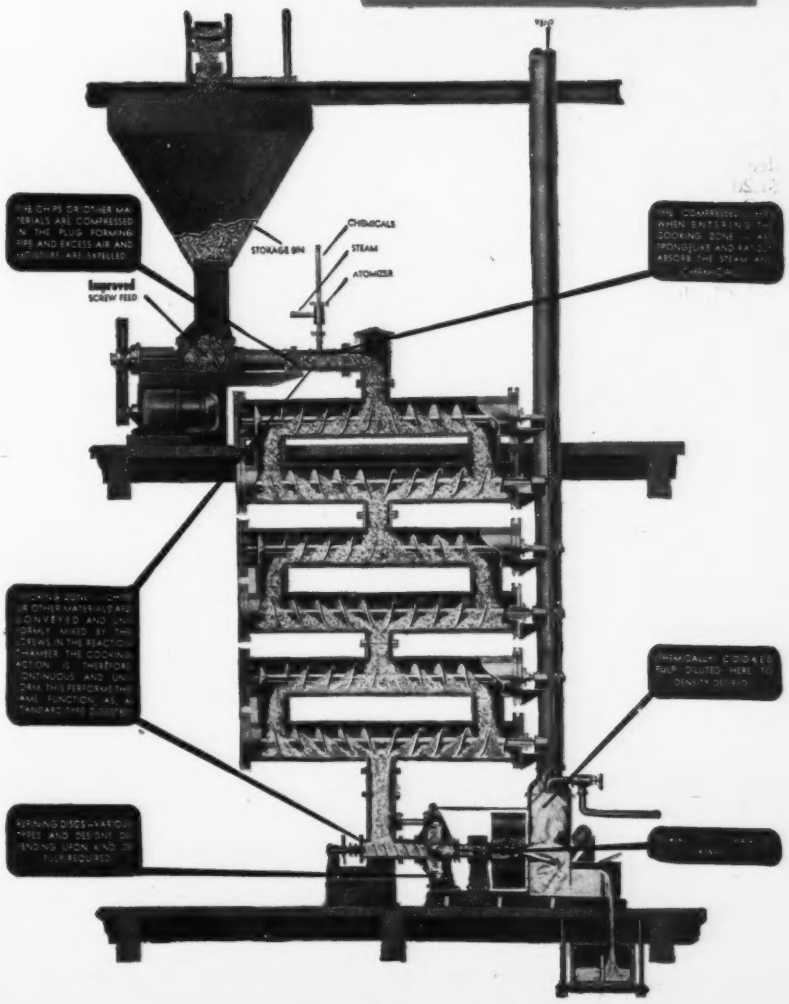

CHIPS OR OTHER MATERIALS ARE COMPRESSED IN THE PLUG FORMING SCREW AND EXCESS AIR AND MOISTURE ARE EXPELLED
STORAGE BIN
CHEMICALS
STEAM
ATOMIZER
Improved SCREW FEED
THE COMPRESSED PLUG WHEN ENTERING THE COOKING ZONE EXPANDS AND RAPIDLY ABSORBS THE STEAM AND CHEMICALS
CHIPS AND OTHER MATERIALS ARE CONVEYED AND UNIFORMLY MIXED BY THE SCREWS IN THE REACTION CHAMBER. THE COOKING ACTION IS THEREFORE CONTINUOUS AND UNIFORM. THIS PERFORMS THE SAME FUNCTION AS A STANDARD TYPE DIGESTER
CHEMICALLY COOKED PULP DILUTED HERE TO DENSITY DESIRED
BURNING DISCS—VARIOUS TYPES AND DESIGNS DEPENDING UPON KIND OF PULP REQUIRED

Illustration shows combination of ASPLUND DEFIBRATOR with three-unit REACTION-CHAMBER

Patented and Patents applied for in U.S.A. and Foreign Countries.

PAPER and INDUSTRIAL APPLIANCES, INC.

122 EAST 42nd STREET NEW YORK, N. Y.

FINANCE

Riegel Sales Rose 25 Per Cent in 1947

Riegel Paper Corporation had a record year during 1947 in the production of glassine, greaseproof, Bristol Tag and other specialty papers, John L. Riegel, president, declared in the company's annual report. In 1947 the four Riegel mills produced 89,799 tons of finished paper, 4.5 percent more than the 85,992 they produced in 1946. Sales totaled $25,231,471 in 1947, 25.6 percent higher than the previous record of $20,085,763 in 1946. The percentage rise in sales was almost the same as the percentage rise in the company's costs, which increased 25 percent in 1947 over the previous year.

Net income after taxes and a new provision of $325,000 for inventory reserve was $1,140,329 in 1947, equal to $4.67 per share of stock. Net income after taxes was $1,105,135 in 1946, equal to $4.53 per share of stock. Dividends were $1.40 per share in 1947 and $1.20 in 1946.

On December 31, 1947, current assets of Riegel Paper Corporation totaled $7,236,964 and current liabilities $2,956,573. Working capital was $4,280,391, slightly less than the figure of $4,405,158 at the close of the previous year.

The company's $3 million program of capital improvements should be virtually completed during the first half of 1948, Mr. Riegel said. Most of the work is being done at the Milford, N.J., mill although the Warren, Hughesville and Riegelsville mills will also share in the program.

"The total productive capacity of the company's mills will be increased about ten percent by the completion of the current building program," Mr. Riegel stated.

The principal items in the program are as follows:

Milford — A new paper machine to increase production of glassine and greaseproof papers, and a building to house it; enlargement of the boiler plant and installation of an additional turbine; new coal handling system and conveyor; new super calenders.

Warren—Improvement of the bleach plant.

"The principal capital expenditure under discussion for the future," Mr.

(Continued on page 18)

American Rolling Mill Becomes Armco Steel

MIDDLETOWN, Ohio — The name of The American Rolling Mill Company was officially changed to "Armco Steel Corporation" at the annual meeting of stockholders last week, Charles R. Hook, president, announced. The change became effective April 17. Shareholders also approved authorizing 3,500,000 additional shares of common stock. William C. Breed, Edward A. Deeds, Charles S. Payson, and Calvin Verity were reelected directors of the company.

St. Regis to Pay on Common

NEW YORK—Directors of St. Regis Paper Company has declared a quarterly dividend of 15 cents a share on the common stock, payable June 1 to stockholders of record May 7.

Consolidated Sales Rose by $8 Million

WISCONSIN RAPIDS, Wis. — Consolidated Water Power and Paper Company had sales of $35,057,248, an increase of $8,112,583 over 1946, according to the forty-fourth annual report which was distributed recently to stockholders. A large part of the increase was attributable to an additional 40,000 tons of coated book paper production and to increased prices, according to a summary by President George W. Mead.

Net income transferred to surplus amounted to $4,068,559 for 1947, equal to $10.17 a share, compared with $2,789,248 for 1946, which was equivalent to $6.97 a share.

"Inventories of $8,088,444 are at inflated values due to continued rising prices," President Mead said. "In order to maintain reserve for contingencies of sufficient amount to absorb probable downward adjustment of inventory values it was necessary to provide an additional $500,000 from income."

Costs of additions to plants and other properties in 1947 amounted to $5,333,162, including $2,880,623 for the expansion program at Biron, where a new paper machine, boiler plant and steam turbine, and new electric grinders were put in operation late in the year. Cost to complete additions which were under construction or authorized at year's end is estimated at $2 million.

The company's major supply problem, President Mead pointed out to stockholders, is the procurement of pulpwood. He cited a recently-announced policy of the Ontario provincial government which drastically curtails export of pulpwood cut from Crown lands and prohibits such export in a few years.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending April 17, 1948

STOCKS

	High	Low	Last
A. P. W.	5½	5⅛	5⅜
Armtsrong Cork Co.	49½	48½	48¾
Armstrong Cork Co., 4 pf. 4	109⅞	109	109
Armstrong Cork Co., pf. 3¾	95	93⅜	95
Celotex Corp.	27⅛	25⅝	26½
Celotex Corp., pf.	19¼	19⅛	19⅛
Certain-Teed Products Corp.	17⅛	16½	16¾
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	24	21½	23¾
Champion Paper & Fibre Co., pf.	97	95	96
Congoleum Nairn Co.	34	32⅝	34
Container Corp. of America	41	38½	39⅛
Container Corp. of America, pf.	98	96½	97½
Crown Zellerbach Co.	30⅛	29⅛	29⅞
Crown Zellerbach Co., pf. 4.20	98	96½	98
Crown Zellerbach Co., 4 pf. 4	112	111	112
Dixie Cup Co.	35¾	34½	35½
Dixie Cup Co., A	54	53	53
Flintkote Co.	37	35⅝	36⅝
Flintkote Co., pf.	99⅞	99½	99⅞
Robert Gair	9⅛	8½	8⅜
Robert Gair, pf.	18⅞	18¾	18¾
International Paper Co.	55¾	53½	54¾
International Paper Co., pf.	97½	97	97½
Johns-Manville Corp.	38⅝	37⅛	37⅛
Johns-Manville Corp., pf.	113	113	113
Kimberly-Clark Corp.	22½	21⅜	22½
Kimberly-Clark Corp., pf.	101¾	100½	101½
Mac Andrews & Forbes	38	37⅜	37⅜
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	22¼	21	21
Mead Corp.	20½	20	20
Mead Corp., pf. 4¼	87	86¼	86¼
Mead Corp., pf. 2	42	42	42
National Container Corp.	13⅛	12¾	13⅛
Paraffine Companies, Inc.	25⅝	25	25½
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	29⅜	28½	29⅛
Rayonier, Inc., pf.	34½	33	33
Ruberoid Co.	63⅛	61¼	62⅛
St. Regis Paper Co.	10⅞	10⅛	10¾
St. Regis Paper Co., pf.	85¼	84½	85
Scott Paper Co.	46	44¾	44¾
Scott Paper Co., pf.	94½	92½	94½
Sutherland Paper Co.	39¾	39¾	39¾
Union Bag & Paper Corp.	34⅛	31⅞	34
United Board & Carton	14	13	13¼
U. S. Gypsum Co.	99½	93½	99½
U. S. Gypsum Co., pf.	175	174½	175
United Wallpaper	5⅜	4½	5⅜
United Wallpaper, pf.	30	30	30
West Virginia Pulp & Paper Co.	44	42½	44
West Virginia Pulp & Paper Co., pf.	105¼	103¼	105¼

BONDS

Celotex Corp., 3½s '60	99¼	99¼	99¼
Certain-Teed Products Corp., 5½s '53	....	....	....
Champion Paper & Fibre Co., 3s '65	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending April 17, 1948

STOCKS

	High	Low	Last
American Writing Paper Corp.	8½	7¾	7⅞
Great Northern Paper Co.	40	39	39¼
Taggart Corp.	10¾	10¾	10¾

How the Kidder Aniliner Improves Printing Quality While Reducing Costs

It's Rugged-Fast-Easily Controlled-Makes a Perfect "Kiss"

Massively built . . . yet with its great weight properly machined, distributed and balanced . . . the Aniliner runs vibration-free at *high speeds*. And its simple, accessible controls regulate so closely as to achieve the perfect "Kiss" impression that is a necessity for fine aniline printing.

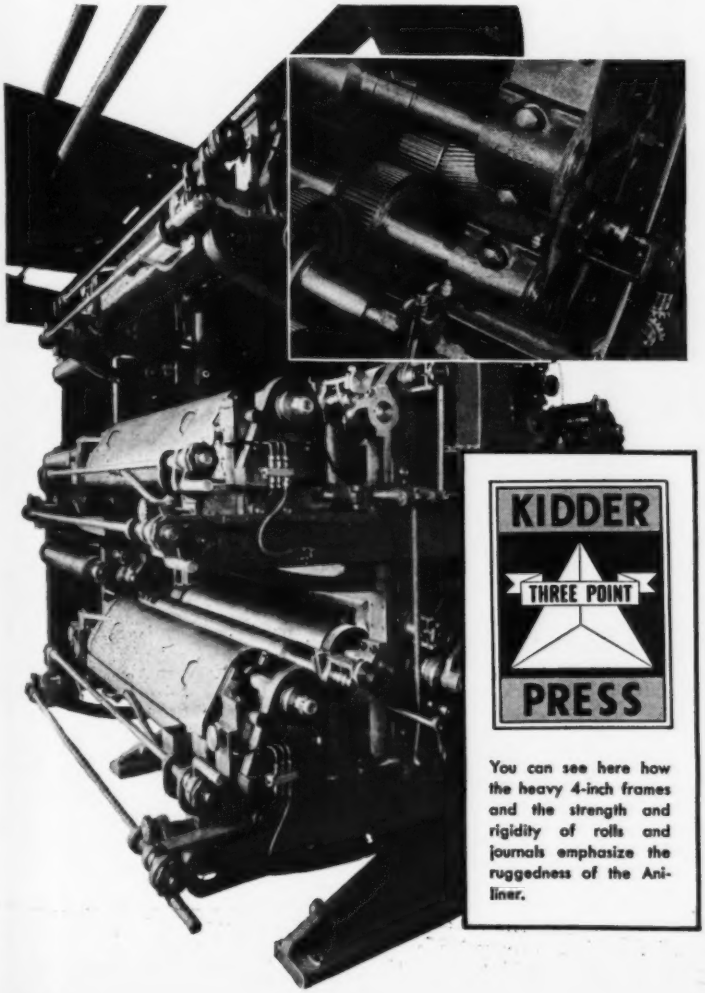
This sturdy American design, created out of the need for such a press, can run continuously at speeds that promise high quality printing, low cost and low maintenance.

KIDDER PRESS COMPANY, INC.

DOVER, NEW HAMPSHIRE

A. E. MARCONETTI
11 W. 42nd St., New York 18, New York

MACHINERY SERVICE CO.
P. O. Box 33, Los Angeles 11, California



You can see here how the heavy 4-inch frames and the strength and rigidity of rolls and journals emphasize the ruggedness of the Aniliner.

The Aniliner is a "Three-Point Press"

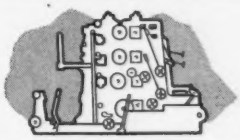
Kidder Three-Point Presses are so-called because they fulfill the three major requirements for perfect printing. See how these features win for the Aniliner a place in this famous family.

CONTROL OVER THE PAPER • Mill roll and paper in-feed control • Web on continuous arc travels paper steadily • Outfeed and Constant Tension Rewind.

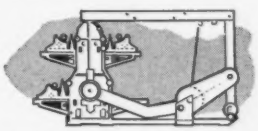
PROPER DISTRIBUTION OF INK • Non-Splash Fountains • Deflection-free Fountain Rolls • Accurate setting of fountain and inking roller contact • Precision adjustment of inking roll against plates • Pressure releases during stops • Inking rolls rotate independently during stops.

ACCURACY OF THE IMPRESSION • Rugged concentric plate and impression rolls • Precision adjustment of plate-to-web contact • Plate Cylinders lift during shutdown without upsetting adjustment or register.

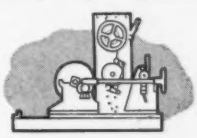
The Kidder Aniliner Bulletin will show you opportunities for high-quality, low-cost Aniline Printing, and describes in detail the latest improvements in these presses. Write for it — no obligation of course.



MULTI-COLOR LETTER PRESSES
for waxed paper, box wrappers, etc., rewound or sheet-delivered — up to 72 inches.



"ANILINER" and "CELLOPRINTER" MULTI-COLOR PRESSES
for decorative papers, cellophane, glassine, etc., — up to 65 inches.



SLITTERS AND REWINDERS
for paper mills, finishing rooms, and small-roll, high-speed slitting — up to 115 inches.

Oxford Earnings Rise To Nearly $3 Million

RUMFORD, Me.—Capacity operations in 1947 resulted in net income of $2,990,906, equal to $6.52 a share, for Oxford Paper Company. In 1946, earnings of $1,842,545, or $3.51 a share, were reported.

Higher earnings last year, resulting from new facilities as well as high operating rates, "while encouraging, are necessary from the standpoint of present costs if the company is to maintain the efficiency of its manufacturing properties," according to Hugh J. Chisholm, president. "With current high costs of replacements, the amounts obtained through depreciation based on original costs are inadequate to renew our facilities as they wear out and therefore, to provide for this deficiency, profits must be in such amounts that they will cover these renewal costs as well as provide a reasonable return to the investors," he said.

Last year, funded debt was reduced by $752,000 to about $8.9 million and $6.1 million was expended on properties. Out of 1947 earnings, $650,000 was set aside for new construction. Current assets last year-end amounted to $13.8 million, including about $4 million in cash and government securities. Current liabilities amounted to $4.8 million last December 31. Inventories at the lower of cost or market totaled $7 million.

NLRB Orders Election At Eau Claire

EAU CLAIRE, Wis. — The National Labor Relations Board will supervise a bargaining election by production and maintenance workers of the Sterling Pulp and Paper Company and United Paper Company. The employes will decide whether they want to be represented by CIO United Paperworkers of America or AFL International Brotherhood of Pulp, Sulphite and Papermill Workers and AFL International Brotherhood of Papermakers, or by neither.

Bucksport Mill Adds Two More Jones Jordans

Bucksport, Me.—The St. Regis Paper Company has recently installed the second two of a total of four E. D. Jones Majastic Jordans. The first two have been operating about a year on one machine, and the second two will handle the Jordaning requirements for another machine. These machines are making book papers, each at a rate of about 145 tons per day.

The Jordans are all equipped with stainless steel Nowave filling and SKF spherical roller bearings. The motors are 350 horsepower and drive the Jordans directly, through Fast's telescopic couplings.

Lost time for "refilling" these Jordans will be kept at a minimum, because the company purchased a complete spare plug assembly which is interchangeable in any of the Jordans on both machines. This plug is completely filled, and equipped with bearings, bearing housings, and packing glands. These always remain on the shaft and greatly facilitate the work of disassembling and assembling the Jordan when changing the fillings."

Riegel Sales Rose 25 Per cent in 1947

(Continued from page 16)

Riegel said, "is the construction of a pulp mill at Acme, N. C., adjacent to the company's 150,000 acres of timberland. The continued scarcity of pulp, accentuated by the menace to supplies from Scandinavia, must be weighed against the deterrent of high construction costs in reaching a decision on this major project."

Paul R. Bachman, formerly vice-president and general sales manager, and Fred I. Jacoby, formerly vice-president and general superintendent, have continued as directors of the company. They retired on July 1, 1947, and February 6, 1948, respectively. A. P. Mitchell, secretary of the company for years, was named vice-president on August 18, 1947. He succeeded Mr. Bachman as general sales manager in 1946. G. Lamont Bidwell is now manager of the Milford mill and R. L. Kerridge is manager of the Warren, Hughesville and Riegelsville mills and both are directly responsible to Walker Hamilton, executive vice-president and general manager.

"Long service is characteristic of Riegel employees," Mr. Riegel stated. "A total of 44 percent of them have been with the company at least ten years. There are 151 men at Riegel who have one or more sons also with the company. These fathers and sons total 338 persons or 20 percent of the company's 1,676 employees."

Lukens Steel Declares Ten Cents on Common

COATESVILLE, Pa. — Directors of Lukens Steel Company at a regular meeting held here declared a regular quarterly dividend of ten cents a share on the common stock of the company, Robert W. Wolcott, president, reported. The dividend is payable May 14 to stockholders of record at the close of business April 30.

Fort Howard Staff to Vote

GREEN BAY, Wis.—Employes of the Fort Howard Paper Company will have an election, under supervision of the National Labor Relations Board, to determine whether they wish to be represented by the CIO United Paperworkers of America. Production and maintenance employes will take part.

Union Bag Sales Set First Quarter Record

JERSEY CITY, N. J.—Sales and earnings of Union Bag & Paper Corporation for the first quarter of 1948 were the largest for any quarterly period in the company's history, Alexander Calder, president and chairman of the board, stated at the annual meeting of stockholders held here April 13. Mr. Calder reported that net sales for the three-month period were approximately $19,300,000 compared with $14,289,575 in the first quarter of 1947.

It was estimated, he added, that net earnings for the March quarter, after provision for taxes, would amount to $3,560,000 or about $2.40 per share on the presently outstanding 1,483,298 shares of capital stock. This would represent an increase of 33 percent over the 1947 first quarter net earnings of $2,671,941 which were equal to $2.10 per share on the 1,271,437 shares then outstanding.

In his statement to the stockholders, Mr. Calder said:

"The preparations which the country undertakes in connection with war threats will probably have a significant economic effect. Business activity under these changed conditions might stay high enough in 1948 to prolong the short supply of kraft paper despite the increased output of the industry. The market may become more competitive, but high demand may not permit softening of price in most lines."

The stockholders approved an increase in the authorized number of shares of capital stock to 2,500,000 shares. All directors were re-elected.

Huyck Sales Reached High Mark in 1947

Rensselaer, N. Y.—The annual report of F. C. Huyck & Sons shows that total sales for 1947 were about $11,754,290, the highest in the history of the firm. The report is based on the combined operations of the local plant and its subsidiary at Arnprior, Canada, and shows net earnings of $1,042,237, an increase of $20,264 over 1946. Of the net earnings, it is estimated that $349,741 was paid out in dividends, compared with $416,409 in 1946. The report disclosed that $692,496 was retained to finance the building program of the firm and other needs of the business. An increase in wages and salaries of about 65 per cent from Jan. 1, 1941 to Dec. 31, 1947 is also brought out in the report while the cost of additional vacations, paid holidays, retirement, disability and death benefits brings the total increase to 75 per cent. Further pay increases were made during 1948, the report stated. The company claims that it has made only moderate price increases within a period of seven years, although raw materials and other supplies have increased substantially in cost. The report features the 13th anniversary of the Canadian plant.

More than 38,000 GENERAL AMERICAN Tank Cars in Service

But Still Not Enough

Our customers want, and need, more tank cars because of increased volume . . . expanded and newly acquired plants. General American has built plants . . . stepped up manufacturing facilities . . . and will keep on expanding to meet the growing transportation needs of our customers. Right now we are building as many cars as the supply of materials will permit. As more materials are made available, we will continue to increase the GATX fleet so that our customers can have sufficient economical transportation for all bulk liquids.

GATX GENERAL AMERICAN TRADE MARK

GENERAL AMERICAN TRANSPORTATION CORPORATION

135 South La Salle Street, Chicago

DISTRICT OFFICES: Buffalo • Cleveland • Dallas • Houston • Los Angeles • New Orleans
New York • Pittsburgh • St. Louis • San Francisco • Seattle • Tulsa • Washington

EXPORT DEPT., 10 East 49th Street, New York 17, New York

International Grants New Wage Contract

GLENS FALLS, N. Y. — Employes of the International Paper Company will receive an hourly increase of 11 cents under terms of a new contract negotiated between representatives of the firm and several labor organizations. About 4,300 employes are affected by the increase in branch plants at Corinth, Ticonderoga, Livermore Falls, Me., York Haven, Pa., Niagara Falls and North Tonawanda. It was also stated that salaried employes will be granted a comparable increase.

The rise in wages creates a new common labor rate in the mills of from $1.12 to $1.20 hourly. Under terms of the contract, employes were also granted an additional paid holiday, New Year's, bringing the total to four yearly.

Among the unions participating in the conferences were the International Brotherhood of Papermakers, International Brotherhood of Pulp, Sulphite and Paper Mill Workers and the International Brotherhood of Firemen and Oilers. Ernest Lambton, regional director of the International organization, served as spokesman for the unions during negotiations while S. E. Kay, manager of manufacturing for the firm, served in a similar capacity. Both sides reported that negotiations were conducted in an agreeable manner and the new contract will remain effective until June 1, 1949.

Besides Mr. Kay the firm was represented by W. D. Maxim, division manager; A. G. Stone, manager of the northern mills kraft division, and George J. Adams, industrial supervisor. Among the labor representatives were Paul Phillips, John Jones, David Larner, Ralph Brewster, Bart Tidland, John P. Burke, Floyd Van Duesen and George Evaul.

British Columbia Schools Add Forestry Courses

VANCOUVER, B. C. — Classes in elementary forestry were recently launched in one hundred and seventy schools in various parts of British Columbia under a plan sponsored by the provincial branch of the Canadian Forestry Association. The courses, in cooperation with school officials, are being given in elementary, senior and junior high schools.

The Canadian Forestry Association reports that a great many of these schools also formed forestry clubs, have undertaken to start experimental tree nurseries and have arranged lectures by men engaged in forestry.

The association has also made available its library of 60 forestry films to schools having sound projectors and its lecture unit will visit a great many more schools before the end of the term.

The elementary forestry course, compiled by W. F. Myring, chief junior forest warden, covers parts of a tree, tree types, forest enemies and the industries.

"By-Products of Wood Waste," by George X. Miller, secretary-manager of the Canadian Forestry Association, was also provided to the schools along with a booklet on woods travel.

NLRB Orders Election At Smith Paper Plant

LEE, Mass.—Employe elections have been ordered at the Eagle and Lee plants of Smith Paper, Inc., by the National Labor Relations Board, which directed that both the office and clerical employees and powerhouse and hydroelectric operators vote within 30 days to determine their collective bargaining representatives, if any.

Hearings on both cases were held before an NLRB trial examiner last January in Pittsfield.

The Eagle Mill election will be to determine whether clerical and office employes — including switchboard operators and chauffeurs, but excluding executives, confidential employes, chemists, time-study observers, salesmen, draftsmen, nurses, laboratory employes, professional employes, groups A and B clerks, guards and supervisors—wish to be represented by the AFL Office Workers Employes International Union.

The Lee elections will be to determine if the powerhouse and hydroelectric operators — but excluding executives, office and clerical employes and supervisors—desire to be represented by the AFL International Union of Operating Engineers or by the AFL International Brotherhood of Paper Makers, or neither.

Voting will be by secret ballot.

Carthage Division Will Vote on Union Membership

CARTHAGE, N. Y.—The National Labor Relations board's area office in Buffalo has announced a union shop election will be held at the Carthage division of the Crown Zellerbach Corporation. A total of 80 paper machine employes will vote on the AFL International Brotherhood of Paper Makers and 250 production and maintenance employes will vote on AFL International Brotherhood of Pulp, Sulphite and Paper Mill Workers.

Kimberly Staff Plans May Festival

NEENAH, Wis. — A May festival party will be sponsored May 1 by the Kimberly Clark Activities Association of the main office. Dancing will follow a dinner at 6:30 at Hotel Menasha. The dance will be held at the Menasha club rooms. Calvin Young is general chairman and Clifford Burton is in charge of the dinner arrangements.

Ontario Unions Hold Wage Policy Parley

TORONTO—This city will be the scene on April 24 of a gathering of close to twenty pulp and sulphite and papermaker unions from Ontario and Manitoba who will meet in an important wage conference. More than 50 union executives will discuss a wage program which will form a basis for new wage demands. The unions are slated to open wage negotiations with management officials April 27, it has been learned. Present wage agreements expire May 1.

Ontario and Manitoba centers to be represented at the wage conferences are: Port Arthur, Fort William, Kapuskasing, Thorold, Espanola, Sturgeon Falls, Sault Ste. Marie, Fort Frances, Kenora, Marathon, Red Rock, Iroquois Falls, Smooth Rock, and Pine Falls, Man.

The St. Anne de Beaupre union from Quebec will sit in on the conference with a view to getting first-hand information which will be used in drawing up their program for Quebec wage talks.

Basic wages in Ontario and Manitoba at the present time are 90 cents an hour. All unions which will take part in the Toronto conference are affiliated with the International Brotherhood of Papermakers and International Brotherhood of Pulp and Sulphite and Paper Mill Workers.

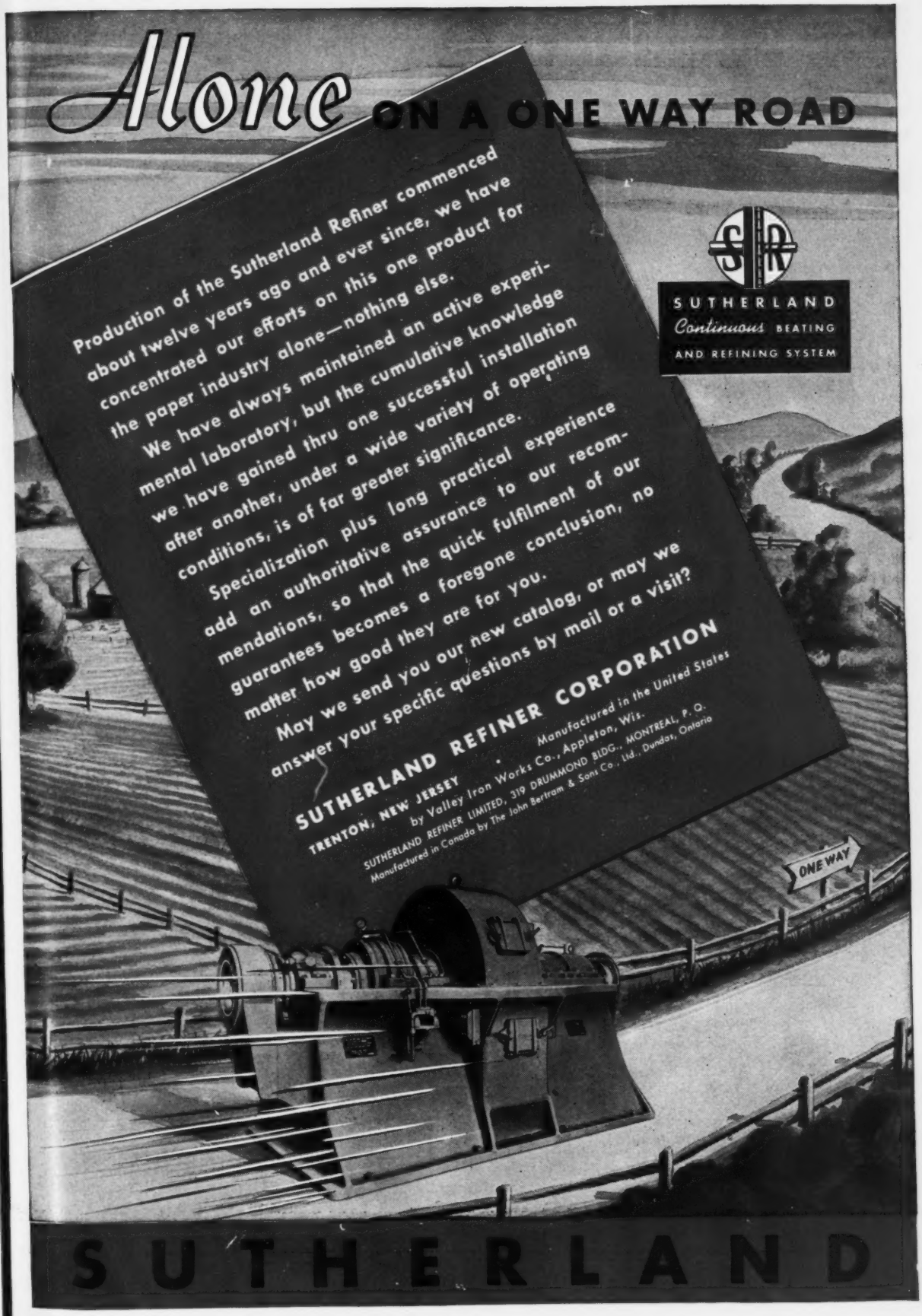
Powell River Old Timers Now Number 140

POWELL RIVER, B. C.—Tribute to 41 new members of the Twenty-Five Year Club of the Powell River Company, Ltd. was paid at the recent annual banquet of that organization. Harold Foley, president of the company, presented engraved gold watches to the 41 new members in recognition of their completion of 25 years of service with the pulp and paper firm. The group included one woman, Mrs. M. R. Miller, who has been in charge of the company's library for the past quarter of a century.

The Twenty-Five Year Club of the Powell River Company was organized in 1944 and now has a membership of 140 employes, each of whom has completed the required quarter of a century service with the firm. During the years they have served with the company these employes have watched the Powell River organization grow from a 100-ton to a 900-ton plant and have seen the population develop from a few hundred to 9,000.

Taggart Machinists Vote

BUFFALO, N.Y.—The National Labor Relations Board has declared that at Oswego, 34 machinists and 25 mechanics employed by the Taggart Corporation, paper manufacturing firm, have voted unanimously for a union shop for the International Association of Machinists.


Alone ON A ONE WAY ROAD
Production of the Sutherland Refiner commenced about twelve years ago and ever since, we have concentrated our efforts on this one product for the paper industry alone—nothing else.
We have always maintained an active experimental laboratory, but the cumulative knowledge we have gained thru one successful installation after another, under a wide variety of operating conditions, is of far greater significance.
Specialization plus long practical experience add an authoritative assurance to our recommendations, so that the quick fulfilment of our guarantees becomes a foregone conclusion, no matter how good they are for you.
May we send you our new catalog, or may we answer your specific questions by mail or a visit?
SUTHERLAND REFINER CORPORATION
TRENTON, NEW JERSEY
Manufactured in the United States by Valley Iron Works Co., Appleton, Wis.
SUTHERLAND REFINER LIMITED, 319 DRUMMOND BLDG., MONTREAL, P. Q.
Manufactured in Canada by The John Bertram & Sons Co., Ltd., Dundas, Ontario
SUTHERLAND
Continuous BEATING
AND REFINING SYSTEM
ONE WAY
SUTHERLAND

New England TAPPI Discusses Synthetic Rubber Latices

Holyoke, Mass.—About 120 members and guests met at the Roger Smith Hotel on Friday night, April 16, to hear E. K. Stilbert of the Dow Chemical Company, discuss the use of synthetic rubber latices for pigment binders for clay coated papers. Preceding the talk, there was a showing of the Champion Paper & Fibre Company's motion picture "Paper Comes to Life". Mr. Stilbert's presentation is summarized as follows:

During the 1920's a considerable period of development was devoted to the use of natural rubber latex as an adhesive for mineral pigment coated papers. Difficulties were encountered with the coated paper after a short natural aging period so the work never progressed very far. Since then the paper industry has greatly expanded its research facilities and can effectively evaluate new materials before engaging in commercial operations.

Prior to World War II a few synthetic resin emulsions, called "synthetic latices", were found to be effective as adhesives for clay coated papers. Unfortunately they were too high priced to be used commercially. The war stimulated the development of many new such latices, which have since been offered to industry at prices that compare favorably with the adhesives normally used.

These materials have been grouped under the general classification of "synthetic rubber latices". Many persons have heard this term so often that they have considered trade names for them as representing only small differences in the characteristics of the products—similar to the various oxidized starches available in the market. This is not true! The number of variables in the manufacturing process can be so large that it is very unlikely that two of them from different sources will be interchangeable for a long time to come.

It is, therefore, impossible to generalize. There are latices such as Saran and Geon that are used as continuous film coatings—as opposed to G R S, G R N. Dow Latex 512K, etc., that are used principally as adhesives or saturants. However, there are literally dozens of the adhesive type. Each is completely individualistic and must be treated as such.

Since it is impossible to generalize, it is necessary to be specific. Thus far only one such latex adhesive has been suitably developed and sold in any quantity as a paper coating adhesive. It is Dow Latex 512K, a styrene-butadiene copolymer. This latex contains 45 percent polymer solids in water and is water thin.

The adhesive efficiency with clay cannot be measured with Dennison Waxes due to the thermoplasticity of the latex film. However, printing tests have been made on all types of presses and indicate that the adhesive power is equivalent to casein. The latex deposits a soft, tacky, flexible elastic film on simple air drying. As a coating adhesive, it imparts limpness and flexibility to the coated paper. The thermoplasticity allows the coating to flow readily during supercalendering resulting in a smoother, more glossy paper surfaces which prints very readily by any standard printing process. Superior printing results are possible when gloss ink or overprint varnishes are used.

The latex deposits a film so flexible that it can be diluted with a relatively large amount of a brittle material and still contribute softness, flexibility and dimensional stability to a coated paper. It is compatible with casein, glue, alpha protein, soya flour, and starch. When properly used with any of these adhesives the resulting properties are additive, giving an almost ideal blend of the good properties of the two adhesives. It can be used with most of the standard pigments used in the industry. However, it is an emulsion and subject to the laws of emulsion stability. Divalent and trivalent cations must be avoided, or immobilized by the use of complex phosphates. Satin white should never be used. Colored pigments should be carefully checked.

When used with casein, the latex contributes low viscosity to the coating color and prevents curling of the paper during drying. The dried paper is easier to finish and is readily supercalendered to a smoother, more glossy surface. The finished paper is relaxed, dimensionally stable, and easy to print. The water resistance is improved. All of these improvements are also obtained with alpha protein.

Soya flour is not generally used as as adhesive in printing papers but is widely used in the wallpaper industry. Dow Latex 512K contributes flexibility and water resistance to soya flour coatings. Since soya flour is inexpensive and can be dispersed cold, it represents a desirable source of adhesive. However, it possesses many disadvantageous properties. Preliminary laboratory work indicates that most of these disadvantages can be overcome or minimized by blending soya flour with latex.

Since natural protein is a stabilizer for this latex system few precautions are necessary when it is blended with proteins. However, the stability with starches is not as good and more care is required to achieve the optimum results with this system. The use of 2 to 3% casein to stabilize the latex (based on Latex solids) is sufficient to make starch-latex coating colors very stable to processing. Latex 512K contributes the same softness, flexibility, easy finishing and improved printing qualities to starch that it does to the other binders. In addition, it improves the water resistance of a starch coating. When half of the starch adhesive is replaced with latex the finished paper can be printed by the planographic printing processes.

Controlled tests over a period of the last nine months have shown the adhesion of coatings containing latex blended with other adhesives to remain the same or improve natural aging of the paper."

The Chairman of the New England Section, Chester H. Child, announced that the next meeting will be held at the New Ocean House, Swampscott, Mass. on May 20 and 21st and will be devoted to packaging and container testing. An interesting program has been arranged and will include a talk by a representative of the Under Secretary of the Navy in charge of Procurement.

Parker Sees Threat In Taxation Policy

(Continued from page 14)

result in complete government ownership. We know that is the object of some of the attacks on the profit and loss system. All history has demonstrated that government ownership of all producing facilities results merely in reducing and not increasing the standard of living."

Parker took up social security as one field in which government took over after private industry had made a good start. "It is unfortunate," he said, "that when we embarked on a system of governmental social security, we chose to adopt practically lock, stock and barrel a system devised by Bismarck, with the intent of keeping the people content so as to perpetuate, not personal freedoms, but government control.

More than 20 per cent of all industrial workers were working under a private security plan by 1930, he pointed out, and it would have been far better to have kept the provision for retirement security on a private rather than a public basis.

"Individual employers would thereby have absorbed the costs that are now paid out of the funds derived by taxes for administration. When the government takes these funds from employer and employe, it can not, and until we have widespread government ownership of industry, will not use the funds for expansion of production. They are used to pay its day to day bills and the reserve fund becomes merely a pile of I.O.U.'s Had the same amount been put in private pension plans, it would have been largely invested in business enterprises and have helped to supply the ever increasing volume of tools needed to improve our production and thereby make more things available to all the people."

Interesting facts about PAPER

Paperboard hat boxes were sought-after luxuries back in the 19th Century, and the "box peddler" was a well-known figure on city streets. The boxes were handmade and many were sturdy enough to be used as traveling cases.

INTERESTING FACTS ABOUT CALCOTONE PASTES

The new CALCOTONE* PIGMENT PASTES are adapted to beater dyeing and produce shades of good fastness to light and bleeding. Being pigment dispersions, they develop full color rapidly in the beater. No grinding is necessary.

Because of their extremely fine particle size and their compatibility with casein, starch, natural and synthetic latex, CALCOTONE PIGMENT PASTES are suitable for surface coating, wall paper printing, and saturating work.

Ask your Calco Representative for full information about Calco's wide range of colors for paper.

*Trademark

Calco — Heller & Merz Department

CALCO CHEMICAL DIVISION
Heller & Merz Department
AMERICAN CYANAMID COMPANY
Bound Brook, New Jersey

New York • Chicago • Boston • Philadelphia • Charlotte • Providence

IMPORTS

NEWSPRINT

N. Y. Times, Mont Clair, St. Johns, N. F., 1463 rolls.
Montmorency Paper Co., (Norfolk), Mont Clair, St. Johns, 1596 rolls.
Montmorency Paper Co., (Portsmouth), Mont Clair, St. Johns, N. F., 155 rolls.
N. Y. Journal American, Markland, Liverpool, N. S., 1114 rolls.
N. Y. Herald Tribune, Markland, Liverpool, N. S., 1815 rolls.
N. Y. World Telegram, Markland, Liverpool, N. S., 715 rolls.
Brooklyn Eagle, Inc., Markland, Liverpool, N. S., 688 rolls.
Herald Statesman, Inc., Markland, Liverpool, N. S., 42 rolls.
Price & Pierce, Ltd., Markland, Liverpool, N. S., 163 rolls.
Richmond Newspapers, Inc., Markland, Liverpool, N. S., 1942 rolls.
Madden Reeve Angel & Co., Inc., Mormacoak, Hango, 1100 rolls.
Clinton Paper Corp., Stuart Prince, Cornerbrook, 494 rolls.
N. Y. World Telegram, Stuart Prince, Cornerbrook, 1329 rolls.
N. Y. Sun, Stuart Prince, Cornerbrook, 800 rolls.

PAPER NAPKINS & TOWELS

H. W. Robinson & Co., Maine, Copenhagen, 20 cs. (napkins).
H. W. Robinson & Co., Pioneer Bay, London, 2 cs. (napkins & towels).

FILTER PAPER

Stevens Nelson Paper Corp., Pioneer Bay, London, 2 cs.
H. Reeve Angel & Co., Inc., Pioneer Bay, London, 9 cs.
H. Reeve Angel & Co., Inc., Malayan Prince, London, 27 cs.

SERVIETTES

H. W. Robinson & Co., Pioneer Bay, London, 22 bls.
H. W. Robinson & Co., Malayan Prince, London, 6 bls. (serviettes & towels).

PHOTO PAPER

Lep Transport, Inc., Pioneer Bay, London, 1 cs. (base paper).
(———), Pioneer Bay, London, 5 cs.
J. J. Gavin, Queen Elizabeth, Southampton, 9 cs. (unsensitized).
J. J. Gavin, Malayan Prince, London, 2 cs.

DRAWING PAPER

Creative Art Printing, Ltd., Pioneer Bay, London, 1 cs.
H. Reeve Angel & Co., Inc., Malayan Prince, London, 1 cs.
International Expediters, Malayan Prince, London, 2 cs.

WRAPPING PAPER

Jay Madden Corp., Mormacoak, Hango, 149 rolls.

NEW YORK IMPORTS

WEEK ENDING APRIL 17, 1948
SUMMARY

Newsprint	13,416 rolls
Paper Napkins & Towels	22 cs.
Filter Paper	38 cs.
Serviettes	28 bls.
Photo Paper	17 cs.
Drawing Paper	4 cs.
Wrapping Paper	149 rolls
Parchment Paper	11 cs.
Water Color Paper	2 cs.
Strawboard	21 bls.
Boxboard	117 rolls

PARCHMENT PAPER

H. Reeve Angel & Co., Inc., Gainesville Victory, Rotterdam, 4 cs.
George Lippelgoes, Gainesville Victory, Rotterdam, 7 cs.

WATER COLOR PAPER

Irving Trust Co., Malayan Prince, London, 2 cs.

STRAWBOARD

Consolidated Novelty Co., Topa Topa, Antwerp, 21 bls.

BOXBOARD

Jay Madden Corp., Mormacoak, Hango, 117 rolls.

RAGS, BAGGINGS, ETC.

Irving Trust Co., Ribeira Grande, Oporto, 70 bls. old waste bagging.
J. T. Flannery, Gudrun Maersk, Rouen, 157 bls. rags, 179 bls. bagging, 43 bls. light bagging.
(———), Gudrun Maersk, Rouen, 249 bls. cotton waste.
A. De Vries Trading Corp., Gudrun Maersk, Antwerp, 56 bls. new jute cuttings.
J. T. Flannery, Gudrun Maersk, Antwerp, 316 bls. old bagging.
Midwest Waste Material Co., Gudrun Maersk, Antwerp, 59 bls. jute bagging.
Chase National Bank, American Miller, Antwerp, 236 bls. paper stock.
New England Waste Co., Clan Brodie, Cochin, 600 bls. cotton waste.
J. Stein, Tampa, Buenos Aires, 21 bls. rags.
E. J. Keller Co., Inc., Skagway Victory, Alexandria, 91 bls. old bagging.
Continental Bank Trust Co., Gainesville Victory, Rotterdam, 52 bls. old bagging.
Royal Manufacturing Co., Gainesville Victory, Rotterdam, 53 bls. cotton waste.
E. J. Keller Co., Gainesville Victory, Rotterdam, 121 bls. jute waste.
New England Waste Co., Jalakanda, Tuticorin, 100 bls. cotton waste.
(———), Khedive Ismail, Alexandria, 177 bls. bagging, 103 bls. old hessians, 142 bls. old bagging.
E. J. Keller Co., Inc., Khedive Ismail, Alexandria, 130 bls. bagging.
Irving Trust Co., Malayan Prince, London, 66 bls. old webbing.
Chase National Bank, American Pioneer, Antwerp, 110 bls. old jute bagging.
Kauders Steuber Co., Petrovsky, Libau, 48 bls. cotton linters, 165 bls. cotton waste.
Amtorg Trading Corp., Petrovsky, Libau, 748 bls. cotton waste.
(———), Norwalk Victory, Antwerp, 56 bls. bagging.
E. J. Keller Co., Inc., Norwalk Victory, Antwerp, 96 bls. old bagging.
Continental Bank Trust Co., Exporter, Cochin, 150 bls. old jute rags.
J. J. Rozendall, Exporter, Cochin, 100 bls. old jute rags.
Brown Bros. Harriman & Co., Exporter, Madras, 200 bls. cotton waste.

GLUESTOCK, ETC.

John Gorvers, Cape Avinof, Barranquilla, 54 rolls.
1st National Bank of Boston, Agwidawn, Trujillo City, 174 bdls.
(———), Exporter, Genoa, 190 bags.
John Gorvers, Agwiking, Havana, 161 bls. dry splits, 52 bags dry cuttings.
National City Bank, Agwiking, Havana, 52 bls.

WOODPULP

Price & Pierce, Ltd., Markland, Liverpool, N. S., 2620 bls. unbleached sulphite pulp.

WOODPULP BOARDS

Jay Madden Corp., Mormacoak, Hango, 365 rolls (solid white).

BOSTON IMPORTS

WEEK ENDING APRIL 17, 1948
E. J. Keller Co., Inc., Gainesville Victory, Antwerp, 70 bls. old bagging.

PHILADELPHIA IMPORTS

WEEK ENDING APRIL 17, 1948
Madden Reeve Angel & Co., Inc., Mormacoak, Hango, 1536 rolls newsprint.
Jay Madden Corp., Mormacoak, Hango, 891 rolls wrapping paper.
Castle & Overton, Inc., Fyling Clipper, Alexandria, 166 bls. old white cotton rags.
(———), Jalakanda, Port Said, 33 bls. old white cotton rags.

BALTIMORE IMPORTS

WEEK ENDING APRIL 17, 1948
Jay Madden Corp., Mormacoak, Hango, 113 rolls wrapping paper.
Madden Reeve Angel & Co., Inc., Mormacoak, Hango, 852 rolls newsprint.
Pulp Sales Corp., Mormacoak, Hango, 235 bls. prime bleached light and strong kraft sulphate pulp, 350 bls. prime unbleached sulphite pulp, 260 bls. prime strong unbleached sulphite pulp, 148 bls. prime bleached sulphite pulp, 1045 bls. strong unbleached bleachable sulphite pulp, 441 bls. prime unbleached kraft sulphate pulp.

For better paper softening at lower cost ... plus effective flameproofing use

DU PONT SULFAMIC ACID

(the basic material in making Amine Sulfamates)

You simply add Du Pont Sulfamic Acid to the desired amine and apply the resulting Amine Sulfamate to your paper or paper products to get these outstanding results.

More Effective Softening

Amine Sulfamates provide excellent softening—even at low humidities. And they are more effective over the whole humidity range, because they do not depend entirely on water pick-up for their action.

Fire and Yellowing Resistance

Paper products are effectively flameproofed, as well as softened, by Amine Sulfamates. A single treatment does the whole job.

Color Stability: In "Fadometer" tests, papers treated with an Amine Sulfamate and modifying agents show complete absence of yellowing, even after a 320-hour exposure.

Low-Cost ... Easily Applied

Du Pont Sulfamic Acid is inexpensive. And when added to amines, it can be easily and uniformly applied by either immersion or spray treatment—at any stage after the dry cans. Amine Sulfamates may also be added to coating compositions and used in many other paper converting operations.

Technical Service

For samples and further information on Sulfamic Acid, write Du Pont today. A technical representative will be glad to call and discuss the application of Du Pont Sulfamic Acid to your operation. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., Wilmington 98, Del.

. . .

Where flameproofing without softening action is required, the regular Du Pont Fire Retardants are recommended.

Helps you make better

PAPER DRAPERIES
PAPER NAPKINS
PAPER TOWELS
PAPER TABLECLOTHS
TISSUE PAPERS

and many other

PAPER PRODUCTS

DU PONT
REG. U.S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

DU PONT SULFAMIC ACID

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, April 21, 1948.

With this year's paper production tonnage making continued gains, the supply-demand picture appears nearer a balance. For the most part, however, the gains are sustained increases in those sections of the industry where shortages have not recently been experienced. February gains were distributed among groundwood printing and converting papers, book (printing and other), coarse papers, special industrial, sanitary, tissues, and building papers, for a total increase of 60,330 tons or 7.36 percent. Newsprint was somewhat behind and fine papers were about on a level with 1948 production.

Market reports on stock conditions show uncoated book not in good supply while coated stocks are better. Unbleached kraft wrapping which showed a gain of approximately 2500 tons for February (10 percent) is still one of the major headaches with carload supplies available only on allocation and a black market flourishing at prices two to three hundred percent of legitimate carload prices. Gains in the tissue field appear to be in decorative tissues which generally are advertised as available for prompt delivery. Considerable promotion is being directed to this type of packaging, and much of the demand for old type wrapping papers is being converted to decorative tissues and printed sulphite bonds as the new wrap with sales and advertising appeal. Toilet tissue is in extremely short supply with dealers having to seek Canadian suppliers to take care of old customers. Carload allocation prices range from $8.50 to $10 per case, but spot prices for such purchases are well above this market.

In the fine paper field, rag content continues in good supply and sulphite bond is available though the better grades are in lesser quantities. Paper board and bristols are reported as plentiful. Fibre drums and tubes are readily available.

Butchers wrap is reportedly hard to locate but specialty papers which meet the various wrapping requirements of meat packers are available.

Generally prices are steady with competitive prices reported in some fields.

New uses reported for multi-wall paper bags include the sacking of prepeeled potatoes of frying size and boilers in sixty-pound pack for hotel and restaurant use. Smaller packages are planned for home use in the near future.

* * *

Adoption of the program for Economic Cooperation is not expected to permit early easing of Canada's emergency imported restrictions. Questioned about the effect of the ECA on Canada's dollar troubles, Canadian Minister of Finance, Douglas C. Abbott, stated that the adoption of the plan should enable Canada to continue to ship to Europe the large volume of exports needed by European countries for their recovery, but that he did not expect it would permit any early change in emergency import restrictions.

Effective February 17, the Canadian Government added to their restricted import list: empty containers wholly or partially manufactured from paperboard or fibreboard to which paper embossed or otherwise decorated in two or more colors has been applied. Also prohibited are papers, paperboards or fibreboards embossed or otherwise decorated in two or more colors. This action was at the insistence of Canadian producers of setup paper boxes who argued that earlier legislation which permitted the entry of paper-covered setup boxes yet restricted imports of cover papers, jeopardized their business.

* * *

Newsprint

Increased imports of newsprint during the months of January and February from Europe and Canada have relieved the United States newsprint shortage to the degree that the spot market price is noticeably softened, with dealers seeking out buyers. Quotations have dropped from last year's price of $230 to $250 a ton to $155-$160 to $180.

North American production for the first quarter is 3,540 tons behind the same three months of 1947, a total which is made up of Canada's increase of 20,204 tons (1.9 percent), Newfoundland's decrease of 12,396 tons (13.2 percent), and United States decrease of 11,348 tons (5.7 percent). During this quarter, Canada and Newfoundland were able to increase their exports to the United States as a result of curtailed shipments to soft currency countries, while Finland, Sweden, Norway, France, Austria, Netherlands and Italy all contributed new tonnage for a total increase of 18,425 tons during February and January. (March figures not yet available.)

United States consumption for the first quarter was 13.5 percent ahead of the same three months of 1947.

Spot offerings at inflated prices so frequently have come from importers handling Swedish newsprint that it was concluded large quantities of Swedish newsprint were available. In fact there are but four Swedish manufacturers of newsprint, each of whom has an exclusive United States agent. There are, however, a few small mills which manufacture limited quantities for export, some of which are offered to U.S. buyers by several importers. Swedish newsprint exports during 1947 totaled 150,000 tons, 25,000 tons of which came to the United States. Imports during January and February totaled 7,297 tons against 776 for the same months of 1947.

United States Imports
(Based on Commerce Reports)
(short tons)

Newsprint Paper

	February		Two Months	
	1948	1947	1948	1947
Finland	6,834	3,825	12,366	11,290
Sweden	3,021	—	7,297	776
Norway	2,471	—	3,049	47
Poland	—	—	—	544
France	3,372	—	6,073	—
Austria	163	—	412	—
Netherlands	866	—	1,561	—
U'n'd Kingdom	—	—	27	—
Italy	297	—	297	—
Overseas Total	17,024	3,825	31,082	12,657
Newfoundland	5,631	7,781	28,667	21,966
Canada	271,145	249,209	554,614	520,234
Grand Total	293,800	260,815	614,363	554,857

Waste Paper

The market continues firm on higher pulp substitute grades with a softened tone on low bulky types of folded news, mixed, old corrugated and overissue, which registered dips from one, two to four dollars per ton respectively. Consumption by eastern mills exceeded receipts by a few hundred tons, the Eastern Conservation Committee reports, while collections poured in despite showery weather.

Cottons

Activity in this field continues limited with light demand and supply. Mill interest is at a minimum with buyers absent from the field. Trading in old cottons likewise is inactive but prices were steady.

Index

The index of general business activity for the week ended April 10 retrograded to 142.6 from 143.6 in the preceding week, compared with 139.5 for the corresponding week of 1947. Index of paperboard production was 192.0 percent, compared with 184.6 in the preceding week and with 164.6 in the corresponding week of 1947.

Paper production for the week ended April 10 was estimated at 102.4 percent, compared with 100.0 (revised) for the preceding week, with 100.7 for the corresponding week of 1947, with 103.6 for 1946, and with 87.4 percent for the corresponding week of 1947. (This does not include mills producing newsprint exclusively.) Tonnage production was 11.5 percent greater than last year's. Despite a 13.3 percent increase in 1948 capacity, this year's production ratio is higher.

Paperboard production for the week ended April 10 was 103.0 percent of capacity, compared with 98.0 for the preceding week, with 96.0 for the corresponding week of 1947, with 101.0 for 1946, and with 97.0 percent for the corresponding week of 1945.

...the record shows!

KALAMAZOO VEGETABLE PARCHMENT LOWERS OPERATING COST

with GE TURBINE DRIVE

This paper machine, installed at the Kalamazoo Vegetable Parchment Company, Kalamazoo, Michigan, is setting an enviable production record. Its G-E turbine drive has made possible lower cost of operation, and less maintenance than previous drives. Money has been saved by attaining a better steam and power balance, with the turbine exhaust furnishing low-pressure process steam for drying.

This 300-hp single-stage turbine has a highly accurate oil-relayed governing system which assures uniformity in the paper. Under normal conditions, speed can be held within ½ of 1 per cent. Speed can be adjusted over a range of 6 to 1. Careful turbine construction assures the utmost in reliability.

G-E has two outstanding turbine drives for paper machine application—the Type DOR (shown above) and the Type DE. The latter, equipped with an electric governor, has an even wider speed range (30 to 1) and very high accuracy (within ¼ of 1 per cent).

General Electric turbine drives can help you lower operating cost, improve production. Experienced G-E engineers will assist you in application of the right drive. For full information get in touch with the nearest G-E Apparatus Sales Office, or write Apparatus Department, General Electric Company, Schenectady 5, N. Y.

GENERAL ELECTRIC

252-25

PRICES

The quotations given below are indicative of trends in an open market. At the moment they can be of little more value for while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—	
Rolls, contract	$93.00/$96.00
Sheets	108.00/109.00
Kraft—per cwt.—Carload Quantities Zone A Deld. 40 lb. base wgt.	
Superstandard Wrapping	$9.00/ —
No. 1 Wrapping	7.25/ 8.00
Standard Wrapping	6.50/ —
Standard Bag	6.50/ —
No. 1 Northern Bag	9.50/ 9.75
Tissues—Per Ream 24x36 (480) 11 lb. Zone 1.	
Wh. No. 1 Frd.	$1.84/$2.00
Wh. No. 1 M. G.	1.94/ 2.00
Wh. No. 1½	1.60/ —
Wh. No. 2	1.75/ —
Kraft Anti-Tar	1.65/ —
Kraft Unbl.	1.85/ —
Manila No. 2	1.62/ —
Shred. Wh. No. 1 cwt.	1.10/ 1.50
Toilet—Per Case of 100 rolls—1 M Sheets.	
Unbleached	$8.50/$10.00
Bleached	8.50/ 10.00
Paper Towels—Per Case of 3750—Zone 1.	
Wh. Jr. M'tif'd 9¼x9½	$5.15
Br. Sr. M'tif'd 10x12	3.60
Br. Jr. M'tif'd 9½x9¾	3.10
Br. Jr. Sgl. fold 10x10¾	3.15
Manila—per cwt.—C-l. f.a.	
No. 1 Jute Tag	$14.50/ —
Reg. Jute Manila	13.25/$15.50
No. 1 Manila	9.75/ —
5 lb. Manila	10.75/ 11.25
Boards, per ton—	
Plain News	$92.50/ —
Filled News	94.00/ —
Plain Chip	90.00/ —
Sgl. Mla. J-d. Chip*	100.00/102.50
White Pat. coated*	120.00/ —
Kraft Liners 42 lb.	100.00/ —
Kraft Corr. .009	105.00/ —
Binders Boards	126.00/ —

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—White, 16 lb.

Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext.			
No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Ledgers, per cwt.

100% Rag Ext.			
No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Sulphite Bonds and Ledgers—White, 16 lbs.

Bonds, per cwt.

No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85

Ledgers, per cwt.

No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

Free Sheet Book Papers—White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	20.40	$19.50
No. 2 Glossy Coated	19.15	18.30
No. 3 Glossy Coated	18.40	17.60
(Per cwt.)	Case	Ton
No. 1 Antique (Watermarked)	$15.90	$15.15
No. 2 Offset	15.15 to 17.90	14.60 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C.	15.40	14.65
B Grade E. F.	13.90	13.30
B Grade S. C.	14.40	13.70

Wood Pulp

Domestic mill contract prices delievered with varying freight allowances.

	Per Short ADT
Groundwood	$80.00/$81.00
Unbleached Sulphite	124.00/ —
Bleached Sulphite	125.00/135.00
Bleached Soda	130.00/ —
Bleached Sulphate	175.00/185.00
Unbleached Sulphate Northern	125.00/155.00
Unbleached Sulphate Southern	130.00/145.00

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ADT
Reg. No. Kraft	125.00/ —
Unbleached Sulphite	125.00/126.00
Bleached Sulphite	125.00/135.00
Glassine Unbleached Sulphite (no freight allowance)	120.00/ —
Bleached Soda	130.00/ —
Groundwood	80.00/ 85.00
Sideruns Pulping News	80.00/ —
Hardwood and Specialty Grades	Nominal

Swedish Quotations

On dock, Atlantic Ports

Bleached Kraft	185.00/195.00
Bleached Sulphite	185.00/195.00
Unbleached Sulphite	155.00/175.00
Unbleached Kraft	147.50/165.00

Finnish Quotations

On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$187.50/ —
Unbleached Sulphite	155.00/157.00
Unbleached Sulphate	147.50/ —

New Domestic Cotton Cuttings

(F.O.B. Shipping Point Plus Dealer's Commision)

White Shirt	$12.00/$12.50
Unbleached Muslin	12.00/ 12.50
Light Silesias	9.00/ 9.25
White Back Blue Overalls	9.00/ 9.50
Blue Overalls	8.00/ 8.25
Fancy Shirt	6.00/ 6.25
Light Percales	8.50/ 8.75
Light Prints	7.50/ 7.75
No. 1 Washables	5.00/ 5.25
Bleachable Khaki	7.50/ 8.00
Unbleachable Khaki	6.50/ 7.00
Cottonades	5.50/ 5.75

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.	
No. 1 Whites Repacked	$5.50/	$6.00
No. 1 Whites Miscellaneous	4.50/	5.00
No. 2 Whites Repacked	3.50/	3.75
No. 2 Whites Miscellaneous	3.00/	3.50
Blue Overalls	3.75/	4.00
Thirds and Blues Repacked	3.25/	3.50
No .1 Roofing Rags	1.90/	2.00
No. 2 Roofing Rags	1.75/	1.85
No. 3 Jute Bagging	1.60/	1.75
No. 4 Brussels and hard back carpets	1.65/	1.75
No. 5A Roofing Rags	1.65/	1.75

New Foreign Cotton Cuttings

(Prices to Mill, F.O.B. Dock, N.Y.)

	Per 100 lbs.	
New Dark Cuttings	$5.50/	$5.75
New Mixed Cuttings	6.25/	6.50
Light Silesias	9.25/	9.50
Light Flannelettes	9.25/	9.50
New White Cuttings	12.00/	13.00
New Unbleached Cuttings	12.25/	13.00
Fancy Shirt Cuttings	6.50/	7.00
Light Prints	7.75/	8.00
Bleachable Khaki, No. 1	7.00/	7.50
Unbl. Khaki, No. 1	6.25/	6.75

Old Foreign Rags

(Prices to Mill, f.o.b. dock, N.Y.)

	Per 100 lbs.	
No. 1 White Linens	$14.00/	$16.00
No. 2 White Linens	12.00/	13.00
No. 3 White Linens	8.00/	9.00
No. 4 White Linens	8.00/	9.00
No. 1 White Cottons	8.00/	10.00
No. 2 White Cottons	7.00/	8.00
No. 3 White Cottons	6.00/	6.50
No. 4 White Cottons	4.00/	4.50
Extra Light Prints	6.50/	7.00
Old Light Prints	4.50/	5.00
Med. Light Prints	3.75/	4.25
Dutch Blue Cottons	5.25/	5.50
Checks and Blues	4.00/	4.25
Linsey Garments	2.50/	2.65
Dark Cottons, European	2.40/	2.50
Dark Cottons, Egyptian	3.25/	3.50
Old Shopperies	2.20/	2.30
New Shopperies	2.40/	2.50

Bagging

(Prices to Mill, f.o.b. N.Y.)

	Per 100 lbs.	
Foreign Gunny, No. 1	$6.50/	$7.00
Domestic Gunny, No. 1	6.75/	7.25
Heavy Wool Tares	6.25/	6.50
Heavy Wool Tares	6.00/	6.25
No. 1 Scrap Bagging	5.50/	5.75
Roofing Bagging	1.75/	2.00
Foreign Manila Rope	6.00/	6.75
Domestic Manila Rope	6.50/	6.75
Jute Strings	5.00/	5.25
No. 1 Sisal Strings	5.25/	5.50
Mixed Strings	1.75/	2.50

Waste Paper

Base Prices to Mills for Average Packings

(Dollars Per Ton)

F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$155.00/$165.00
No. 1 Hard White Envelope Cuts	145.00/ 155.00
No. 1 Hard White Shavings, ruled	145.00/ 155.00
No. 1 Hard White Shavings, ruled	110.00/ 130.00
Soft White Shavings, one cut	145.00/ 155.00
No. 1 Soft White Shavings	135.00/ 145.00
Soft White Shavings, Misc.	125.00/ 135.00
No. 1 Fly Leaf Shavings	45.00/ —
No. 1 Groundwood Fly Leaf Shavings	35.00/ —
N. 1 Heavy Books & Magazines	25.00/ 26.00
Mixed Books	15.00/ 18.00
No. 1 White Ledger	75.00/ 80.00
Manila Tab. Cards	95.00/ 100.00
New Manila Envelope Cuttings, one cut	100.00/ 110.00
New Manila Envelope Cuttings	65.00/ 75.00
Extra Manilas	25.00/ 30.00
Mixed Kraft, Env. & Rag Cuttings	75.00/ 85.00
Kraft Envelope Cuttings	110.00/ —
Triple Sorted, No. 1 Brown Soft Kraft	65.00/ 75.00
New Kraft Corrugated Cuttings	70.00/ 75.00
No. 1 Assorted Old Kraft	50.00/ 55.00
New Jute Corrugated Cuttings	27.00/ —
Old 100% Kraft Corrugated Containers	35.00/ 40.00
No. 1 News	13.00/ 14.00
No. 1 Mixed Papers	10.00/ 11.00
Box Board Cuttings	— / —
White Blank News	75.00/ 85.00
Overissue News	16.00/ 17.00
Old Corrugated	20.00/ 22.00
Mill Wrappers	22.00/ 24.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)	
Coarse Polished—	
India	.33¾/ .35
Fine India	.38¾/ .42½
Fine Polished	
Unpolished—	
Paper Makers	.28¼/ .30¾
Tube Rope	.29 / .31½
Wrapping	.32 / .35¾
Cotton	.63¼/ .66¾
(Hard Fiber)	
Mex. Sisal	.21 / .27
Manila (Reprocessed)	.30 / .32
(American Hemp)	
Polished Hemp	.36¾/ .60
Unpolished	.32¼/ .54

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—	
New White No. 1	.11 / .12
New White No. 2	nominal
Light Silesias	.07½/ .08
Black Silesias, soft	.06½/ .07
New Unbleached	.10½/ .11¼
Washable Prints	.06½/ .07
Washable No. 1	.05 / .05½
Blue Overall	.07¼/ .08
Cotons—According to grades—	
Washable Shredding	.03½/ .04
Fancy Percales	.06¾/ .07¼
New Black Soft	nominal
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.06 / .06½
Bleachable Cotton Cuttings	.07 / .07½
Men's Corduroy	.05½/ .06
Ladies' Corduroy	.05 / .05½
Cottonades	.05½/ .06

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

White No. 1 —Repacked	4.50 / 5.00
Mixed White	4.00 / 4.25
White No. 2—Repacked	3.50 / 3.75
Thirds and Blues—	
Miscellaneous	2.25 / 2.50
Repacked	2.75 / 3.00
Roofing Stock—	
Foreign No. 1	nominal
Domestic No. 1	1.85 / 1.90
Domestic No. 2	1.75 / 1.80
Roofing Bagging	1.65 / 1.70
Old Manila Rope	6.25 / 6.50

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—	
Foreign	nominal
Domestic	4.75 / 5.25
No. 1 Clean Bright—	
Sisal Strings	.04½/ .05
No. 2 Clean Bright—	
Sisal Strings	.03½/ .04
Sisal Jute	.02¼/ .03
Scrap—	
No. 1	5.00 / 5.50
No. 2	2.50 / 3.00

Always Specify

DIAMOND

- SODA ASH
- CAUSTIC SODA
- LIQUID CHLORINE
- SILICATE of SODA

DIAMOND ALKALI COMPANY
CLEVELAND 14, OHIO and EVERYWHERE

Wool Tares, heavy ..	4.75	/ 5.00
New Burlap Cuttings	6.00	/ 6.50

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00/	$115.00
No. 1 Hard White Shavings, unruled .	100.00/	—
Soft White Shavings, One cut	90.00/	95.00
White Blank News .	75.00/	—
Soft White Shavings	80.00/	—
No. 1 White Ledger	85.00/	90.00
Ledger, Colored	70.00/	72.00
No. 1 Heavy Books & Magazines	24.00/	26.00
Overissue Magazines	nominal	
New Manila Envelope Cuttings	80.00/	—
No. 1 Assorted Old Kraft	60.00/	65.00
No. 1 Mixed Paper .	11.00/	12.00
Box Board Cuttings .	10.00/	11.00
Kraft Corrugated Cuttings	90.00/	100.00
Old Corrugated	24.00/	26.00
Overissue News	20.00/	22.00
No. 1 News	13.00/	15.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled .	6.25	/ 6.75
No. 1 Hard White Shavings, ruled ..	6.00	/ 6.50
Soft White Shavings, Misc.	6.00	/ 6.25
No. 1 Fly Leaf Shavings	—	/ —
No. 2 Fly Leaf Shavings	4.25	/ —
No. 1 Groundwood Fly Leaf Shavings	1.75	/ 2.00
No. 2 Groundwood Fly Leaf Shavings	1.50	/ 1.75
Mixed Colored Shavings	2.00	/ 2.25
New Manila Envelope Cuts, one cut	4.50	/ 4.75
Hard White Envelope Cuts, one cut	7.00	/ —
Triple Sorted No. 1 Brown Soft Kraft	3.75	/ 4.00
Mixed Kraft Env. & Bag Cuttings	4.00	/ 4.25
Kraft Envelope Cuttings	5.00	/ 5.50
No. 1 Heavy Books & Magazines	1.75	/ —
New Manila Envelope Cuttings, one cut .	—	/ —
New Manila Envelope Cutings	4.00	/ 4.25
White Tabulating Cards	5.00	/ —
Groundwood Tabulating Cards	1.50	/ 1.75
White Blank News .	2.25	/ 2.50
No. 1 Assorted Old Kraft	3.50	/ 4.00
No. 1 Mixed Paper .	.60	/ .65
Overissue News	.90	/ 1.00
No. 1 News	.70	/ .75
Box Board Cuttings .	.60	/ .70
New Corrugated Cuttings, Kraft	2.75	/ 3.00
Old Kraft Corrugated Containers ..	2.00	/ 2.25
Old Corrugated Containers	1.25	/ 1.30
Jute Corrugated Cuttings	1.07½/	—
Paper Strings	2.00	/ 2.25

Bagging

(F. o. b. Boston)

Gunny Bagging—		
Foreign	—	/ 4.75
Domestic	—	/ 4.75
Sisal Rope No. 1 ..	6.00	/ —
Sisal Rope, No. 2 ..	5.50	/ —
Mixed Rope	5.25	/ —
Mixed Strings	2.00	/ 2.50
Transmision Rope—		
Foreign	nominal	
Domestic	3.00	/ 3.50
Manila Rope—		
Foreign	nominal	
Domestic	6.25	/ —
Soft Jute Rope	5.00	/ 5.25
Jute Carpet Threads	6.00	/ —
Bleachery Burlap	8.50	/ 9.00
Scrap Burlap—		
Foreign	—	/ 4.75
Domestic	—	/ 4.87½
South America	5.25	/ —
Wool Tares		
Foreign	4.75	/ —
Domestic	4.75	/ —
Asst. Wool Pouches .	5.00	/ 5.25
New Zealand Wool Pouches	5.25	/ 5.50
New Burlap Cuttings	6.00	/ 6.50
Heavy Baling Bagging	5.25	/ 5.75
Paper Mill Bagging .	3.50	/ 3.75
No. 1 Roofing Bagging	1.75	/ —

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—		
New Light Prints .	.07½/	—
Fancy Percales ..	.08	/ —
New White No. 1 .	.11	/ .11¼
New Light Flannelettes	.08	/ .08½
Canton Flannels, Bleached	.10	/ .11
Underwear Cutters, Bleached	.11½/	—
Underwear Cutters, Unbleached	.11	/ .12
Silesias No. 1	.08	/ .08½
New Black Silesias .	.04½/	—
Red Cotton Cuttings	.05	/ —
Blue Overalls	—	/ .08½
Soft Unbleached	.11	/ .12
Blue Cheviots	.08½/	.09
Fancy	.05	/ —
Washable	.06	/ —
Khaki Cuttings	.06½/	.07½
Corduroy	.03½/	—
Men's Corduroy	.04½/	—
Ladies' Corduroy	.04	/ —
Khaki Canvas	—	/ .06
B. V. D. Cuttings ..	.11½/	—

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—		
Repacked	3.80	/ —
Miscellaneous	3.20	/ —
White No. 2—		
Miscellaneous	2.65	/ —
Twos and Blues, Repacked	2.20	/ —
Old Blue Overalls ..	2.25	/ 2.50
Thirds and Blues, Repacked	2.20	/ —
Miscellaneous	1.80	/ —
Black Stockings	3.50	/ 4.00
Roofing Stock—		
No. 1	1.85	/ —
No. 2	1.75	/ —
No. 3	1.65	/ —
No. 4	1.65	/ —
No. 5, Quality A.	1.35	/ —
Quality B.	1.20	/ —
Quality C.	.95	/ —
Old Manila Rope	6.00	/ —

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—		
No. 1 Hard White Envelope Cuts, one cut	$150.00/	—
No. 1 Hard White Shavings, runruled	140.00/	—
No. 1 Soft White Shavings	120.00/	—
No. 1 White Ledger .	85.00/	—
No. 1 Heavy Books & Magazines	35.00/	—
White Blank News .	80.00/	85.00
Mixed Kraft Env. & Bag Cuttings	90.00/	110.00
No. 1 Assorted Old Kraft	35.00/	—
Overissue News	24.00/	—
No. 1 News	31.00/	—
No. 1 Mixed Paper .	13.00/	—
Old Corrugated	26.00/	—
Mill Wrappers	17.00/	—

MARKETS

BLANC FIXE—Demand heavy. Prices firm. Pulp is currently quoted at $85 in bags, car lots at works, 6 cents per lb., l.c.l., deld.; by-product $75 per ton, car lots at works, 6 cents per lb., l.c.l., deld.

BLEACHING POWDER — Supply adequate. Delivery good. Prices range from $3.75 to $4 per 100 pound drums, l.c.l. works.

CASEIN — European buying firms Argentine market. Domestic flush season delayed until late April with light supply expected. Current prices on processed acid precipitated casein at 31 to 33 cents per pound for domestic grades and 29½ to 31 cents for imported grades, f.o.b. shipping point.

CAUSTIC SODA—Coal strike has worsened supply. Demand heavy. Solid caustic is reported at $2.85 per cwt.; flaked and ground is quoted at $3.25 per cwt. in 400 pound drums, $3.75 to $4 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.25 per cwt.; liquid 73 percent in tank cars at $2.35 per cwt., at works.

CHINA CLAY—Domestic grades and imported in good supply. Filled is $9 to $11.50 per ton, car lots; coating clay is $14 to $22. Imported clay quotation, short tons, $16 to $35, export warehouse.

CHLORINE—Production cutback by coal shortage. Currently quoted at $2.25 per cwt. in single unit tank cars, at $2.55 to $3.75 per cwt., in multi-unit tank cars, f.o.b. works.

ROSIN — Active export inquiry. Domestic buying improving. New crop is tardy. Gum rosin in drums per 100 pounds net in car lots, f.o.b. Savannah: B, $6.50; G, H, I, K, $6.88; wood rosin, per 100 pounds net, car lots, f.o.b. Savannah: B, $4.50 to $5; FF, $5.50 to $6.

ROSIN SIZE — Seventy percent, gum and pale wood grades. Supply ample. Demand good. Tank cars $5.75 to $6, f.o.b. southern shipping point.

SALT CAKE—Demand continues ahead of supply with slight improvement in shipments. Prices unchanged. Domestic salt cake is quoted at $20 to $26.

SODA ASH—Supply worsened by coal shortage. Deliveries behind schedule. Current prices, car lots, per 100 pounds; in bulk, $1.10; in paper bags, $1.30; and in barrels, $1.70.

SODIUM BICARBONATE—Strong demand with supply somewhat tighter. Reported as $1.85 per cwt. paper bags, carload lots.

STARCH—Supply plentiful. Demand easier. Active export inquiry. Pearl grade quoted at $6.96 per 100 pounds; powdered starch at $7.07 per 100 pounds; car lots, New York.

SULPHATE OF ALUMINA—Prices unchanged. Supply steady. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2 per 100 pounds in bags, car lots, at works.

SULPHUR—Prices unchanged. Supplies ample. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

TALC — No change in domestic market. Demand far in excess of supply. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

TITANIUM DIOXIDE—Market unchanged. Extremely tight supply. No early easing seen in situation. Shipments on allocation. Anastase 17½c lb. carload lots, 18-18½c l.c.l., rutile, 19½c lb. carload lots, 20-20½c l.c.l.; 50-lb. bags, f.o.b. plant, minimum freight allowance.

THE MEAD SALES COMPANY
230 PARK AVENUE, NEW YORK 17, N. Y.
20 NORTH WACKER DRIVE, CHICAGO 6, ILL.

MEAD
pulp

DISTRIBUTORS OF WOOD PULP
BLEACHED AND UNBLEACHED
CHEMICAL AND MECHANICAL WOOD PULP

Although Paul Bunyan's hunting dogs were giants, they got out of wind following him. So he bred a dachshund and a Russian wolfhound. The puppy could run a whole week without getting out of breath—if all his running was down hill.

A reproduction of this incident from the fabulous life of Paul Bunyan—the twenty-ninth of a series—will be sent on request. It will contain no advertising.

21 Old Timers Join St. Regis-Taggart List

WATERTOWN, N. Y. — Twenty-one employes of St. Regis Paper Company and Taggart Corporation mills in Northern New York were honored at a testimonial dinner April 8 at the St. Regis Inn, Deferiet, for having completed 25 years of service at the end of 1947. Clifford C. Wenzel of Deferiet, personnel manager of the northern group of mills, presided and called the names of the employes who received the 25-year pins.

Speakers included E. F. Marshall, Deferiet, general manager of the ground wood division of the northern group of St. Regis mills; William R. Adams, Watertown, general manager of the kraft division of the Taggart Corporation; and Alex Smalley of New York, labor advisor to the president, Roy K. Ferguson of New York.

The pins were presented to the St. Regis Company workers by Mr. Marshall with the exception of that to Elmer Wilke, Oswego, who received his pin from W. R. Gorman, Oswego, superintendent of the machine shop in Oswego. Mr. Adams presented the pins to the Taggart employes.

Management officials present at the dinner, besides Mr. Marshall, Mr. Adams, Mr. Wenzel, Mr. Gorman and Mr. Smalley, were: R. E. Burkhardt, L. C. Burdick, Wilfred Arsenault, Wells Forbes, H. J. Brownell, W. E. Hahn, Louis Honer, Winslow Mills and L. C. Robinson.

The employes honored are from St. Regis mills at Deferiet, Norfolk and Oswego and from Taggart mills in Watertown, Carthage, Herrings and Oswego.

Now Available

SAP BROWN

from

American Lignite

Unlimited Quantities
Lowest Prices

Try American Sap Brown for low cost brown paper with or without toning colors. Ask for samples and information.

American Lignite Products Co.
Ione, Calif.

Eastern Agent, B. M. Snyder III
621 Cherry St.
Phila. 6, Pa.

G. E. Employes Will Accept Safety Award

Pittsfield, Mass. — Adrian Cyr, a foreman in the compound division, and Norman Nicholson, an operator in the phenol plant of the same division, have been selected to represent management and employees when the General Electric Company's chemical department receives its safety award for holding second place in the state. Presentation of the award by the Massachusetts Safety Council will be made in Boston.

Cyr and Nicholson will attend the award ceremony with Royal V. Mackey, safety engineer for the compound division; Arthur G. Sanford, department manager of personnel, services and safety; Charles F. Hartwell, safety engineer for the molded products works, and Raymond S. Bertolino, fire chief for the molded products works.

During 1947, the chemical department had only two accidents and nine days of lost time. Its frequency was .6 one-fifth the state average of 10.3, and its severity rate was .003 or one two-hundredths of the state average of .59.

Brotherhood Claims Brown Employes

Fort Edward, N. Y.—The International Brotherhood of Pulp, Sulphite and Paper Mill Workers declared here that employes of the Brown Company, Berlin, N. Y., held a meeting recently at which they voted to sever connections with the United Mine Workers in order to affiliate with the former organization. About 3,000 employes of the firm will be effected by the change. It was stated by labor leaders here that Vice-President Fred Morris, supervisor of union activities in the New England States, had notified officials of the Brown Company that a majority of employes are now members of International Brotherhood of Pulp, Sulphite and Paper Mill Workers.

Trees for Tomorrow to Give Out Seedlings

MERRILL, Wis. — Trees For Tomorrow, Inc., will start distributing 450,000 seedling trees the latter part of this month in southern counties and possibly early in May in the northern counties. In addition to planting stock purchased from the United States Forest Service and the Wisconsin Conservation Department, 50,000 trees have been obtained from the Nekoosa Edwards Paper Company nursery.

OBITUARY

Courtlandt Griffin

HOLYOKE, Mass. — Courtlandt B. Griffin, 52, president of the Carew Manufacturing Company, in South Hadley Falls, died last week at his home in nearby Longmeadow, after a long illness.

Mr. Griffin, a brother of Bulkley S. Griffin, Washington newspaper correspondent, was the son of the late Solomon B. Griffin, for over 40 years managing editor of the famed Springfield Republican.

On his father's side he was descended from Maj. Jasper Griffin who came from Wales before 1670 and settled in Southold, L. I. On his mother's side he was a descendant of Alice Southworth, wife of Gov. William Bradford, second governor of Plymouth Colony, and of Maj. William Brooke, a commander of Pennsylvania troops in the Revolutionary War.

Mr. Griffin became associated with Carew Manufacturing—a paper manufacturing plant—in 1914, and served as vice-president from 1925 to 1930, when he was elected president. He held that post until the time of his death. He was also a director of the Carew Company; a director of the Southworth Paper Company of West Springfield, the Hampshire Paper Company, and Hampshire Realty Company, of South Hadley Falls, and of the Wilcox and Gibbs Sewing Machine Company, of New York. He was a former vice-president of the New England Paper Service Association.

He was an aviator with the Army during the first World War and held the rank of second lieutenant. During World War II, his company held the major contract for the manufacture of American invasion currency, supplying the paper used by the U.S. troops in Europe and other invaded countries. The company also supplied paper for the peacetime currencies of several foreign nations.

Maynard E. Wright

WATERTOWN, N. Y. — Maynard E. Wright, better known as Pete to a wide circle of friends in the pulp and paper industry, was buried here late last month. He had become ill while attending the TAPPI convention at the Commodore in New York and died a few days later at Gotham Hospital.

H. L. Dibble

SHELBY, Ohio — H. L. Dibbble, 59, president of Carton Service Inc., died suddenly March 31 at his home at Shelby, after a brief illness.

Originally with the old Gardner-Harvey Corp., he left that company in 1926 and founded Carton Service Inc.

He had been with the Bagley & Sewall Company for more than a score of years as sales engineer and assistant sales manager.

Serious Business

Serious business—this thing of finding the particular felts best suited to the characteristics of both stock and paper machine.

To help superintendents on felt problems is the main function of Orr field representatives. These men are all specially trained and gladly respond whenever they can be of service.

The Orr Felt & Blanket Co.
PIQUA, OHIO

ORR

COMPLETE LINE OF WOOLEN FELTS *(a size and texture for every paper machine requirement)*: **STANDARD**—untreated; **ORR-CHEM**—chemically-treated; Cotton Warp for cement & asbestos products.

Mando First Aiders Vie for Honors

KENORA, Ont.—Displaying championship form in the art of caring for the injured, the Fort Frances Paper Mill team captured the coveted Mando First Aid Trophy for the second successive year in the Ninth Annual Inter-mill Contest recently sponsored by the Minnesota and Ontario Paper Company. The winners of this annual event, held by management to encourage proper first aid practices throughout the Mando industries, scored the highest of four plant teams in a spirited contest to correctly diagnose and treat the injuries of a patient in a simulated accident.

The Fort Frances representatives had previously acquired the cup from the Falls Paper Mill team in last year's contest and need only a victory in next year's competition to gain permanent possession of the trophy.

Acting as chairman of the banquet preceding the competition, S. C. Stratton, vice-president and general manager of the Canadian Division of Mando, highlighted the ceremonies with a short address to the assembled first aid leaders, nurses and company representatives in attendance.

Pointing out the important part the pulp and paper industry in Canada plays in the economy of the world today and its progressive policies, Mr. Stratton said, "We, who reside in Canada, have a most vital concern in the well-being of this industry. This concern must reflect itself in our fellow-workers and associates in the United States because we know that events and occurrences that are detrimental or beneficial to our Canadian company become directly and indirectly harmful or favorable to the company as a whole."

"Specifically," continued Mr. Stratton, "it is my firm conviction that our company is in the front ranks in its progressive thinking and action; it has a comprehensive program of plant improvement and expansion planned and under way; it is public minded; its announced policy is to improve work conditions in its plants and it makes substantial contributions to assist in providing for the welfare and security of its employees."

Mr. Stratton stressed that constant promotion of safety principles in the mind of every employee is necessary so that each will recognize and take heed of the dangers in his every day life. Benefit payments for accidents in Ontario alone in 1947 totaled $880,000, he added.

Appearing as a special feature on this year's program, the newly organized first aid team from Mando's Patricia Logging Area served notice of stiff future competition with a well executed demonstration of woodland first aid. This group represents another feature in the modernization of Mando's logging operations supplementing the hospital facilities and nurses presently available for any emergencies arising in the woods.

R. W. Croucher, safety officer of Mando, was in charge of the contest proper and made the presentation of the Mando trophy and the individual awards to the winning team. Each member received a pen and pencil set.

Attendance prizes to all who had been faithful in first aid class attendance during the season were distributed by E. E. Crandall, Kenora plant manager.

Bengtsson Represents Swedish Pulp Exporters

NEW YORK — Percy von Schoultz & Company A/B, Eriksbergstatan 27, Stockholm, Sweden, exporters of mechanical and chemical pulps, has named Harry G. Bengtsson as exclusive sales representative for the United States market.

Harry Bengtsson is well known to the American paper industry as president of Benex Corporation, paper export merchants. He was recently elected president of the United States Paper Exporters Council, Inc., at their sixtieth annual meeting.

Offices are maintained in the Chanin Building, 122 East 42nd Street.

why not let

pleasant odors

do a merchandising job for you?

Your paper—whether it be paperboard, gummed paper, wrapping paper, kraft paper, parchment paper—can profit by the use of

sindar aromatics

Especially blended for use in paper and paper products . . .

effective, easy-to-use, economical

Why not give your paper a better chance with a better odor? Ask us for further information, samples and prices.

SINDAR *Corporation*

Industrial Aromatics and Chemicals

330 West 42nd Street, New York 18, N. Y.

Branches: Philadelphia • Boston • Cincinnati • Detroit • Chicago • Seattle • Los Angeles • Montreal • Toronto

Vermont's Governor Seeks Victory Dam

WOODSTOCK, Vt.—The Vermont flood control committee, attending a two-day meeting here of flood control boards from four Connecticut River states, was instructed by Gov. Ernest W. Gibson to recommend the construction of the Victory dam and reservoir.

The governor said he wanted a cooperative flood control program which would not deplete Vermont's resources but at the same time would protect neighboring states to the south.

The governor, in instructing the committee, said Victory provides a natural site for a dam and the land needed for the reservoir is made up of woods, swamps and a few long-abandoned farms.

He said the reservoir would provide a fine recreational area and in flood times would help protect St. Johnsbury and areas in Vermont below St. Johnsbury as well as cities in down-river states.

Representatives of the states of Connecticut, New Hampshire, Massachusetts and Vermont attended the two-day conference—first meeting of flood control committees in Vermont since the floods of 1936. The governor expressed hope that the committees would again arrange to visit Vermont and look over the proposed reservoirs to get a better understanding of the state's problems.

Powell River Distributes Awards for Shop Hints

POWELL RIVER, B. C. — Two employees of the Powell River Company recently received hundred dollar awards in the contest which is run continually by the company for suggestions on improvements in production methods in the plant. The two winners were H. R. Slade and J. W. Monteith, their suggestions being considered as being outstanding by the Union - Management Suggestion Committee.

Mr. Slade's suggestion concerned pallet board loading, and Mr. Monteith's concerned an improved automatic oxy-acetylene cutting machine.

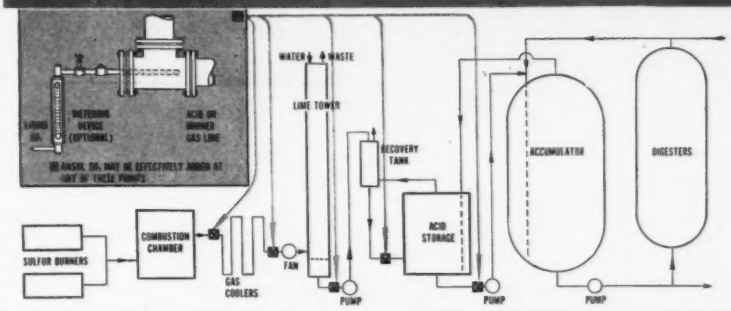
R. Ellwyn won $75 for a suggestion about improved method of cleaning Flakt dryer; F. Parsons, $25, case hardening of all S.F. nuts; Mrs. A. Townsend, $20, improvement in laboratory sheet machine presses; S. Rozenkranz, $15, improvement in block loader; H. C. Vincent, $15, improvement in handling methods at machine shop platform; A. Knight, $10, blotter guide on laboratory test sheet machine; A. B. Whitson, $10, improved grinder sample can; R. H. Southcott, $10, use of friction control on Flakt dryer fans; R. H. Southcott, $5, hot water flow gauge on Kamyr cylinder mould; A. G. Belyea, $5, reduction of noise and dust from laboratory rotap screen.

The road to 深火* is paved with good intentions

...DON'T SHUT DOWN YOUR MILL...if you intend to repair your acid system

*Confucius say—"No hell in Chinese language"

Use ANSUL SO_2 and maintain maximum production!



If you must repair or replace your sulphur burner, combustion chamber or gas coolers, use ANSUL liquid SO_2 and keep your mill operating at capacity.

1—Avoid interruption of acid plant operation.
2—Maintain peak capacity in pulp plant during repairs of acid system.
3—Get proper balance between free and combined SO_2.
4—At a very small installation cost.

Send for complete information. You will learn also how to use Ansul Liquid SO_2 to fortify your cooking acid during the Summer months, and for green wood cooks . . . to improve your digester schedules, obtain more complete pulping and better screening of pulp.

Ansul liquid SO_2 may be added simultaneously at one or more points in the system (see diagram).

• • •

Prepare for an emergency. Consult the Ansul Technical Staff *NOW*. Learn how easy and economical it is to avoid shutdown headaches.

LIQUID Sulfur Dioxide by ANSUL

ANSUL CHEMICAL COMPANY
INDUSTRIAL CHEMICALS DIVISION, MARINETTE, WIS.
60 E. 42nd St., New York — 535 Chestnut St., Philadelphia

1. FOR THE MONEY As a base material for making fine cotton content paper, Rayco is your best buy in linter cotton.

2. FOR THE SHOW You can *see* the difference in quality between clean, carefully graded and inspected Rayco and ordinary linter cotton.

3. TO MAKE READY Rayco requires no rag room operations because it comes to you free of impurities, dyes, synthetics, knots and weavings.

4. TO GO Cooker-ready Rayco can help you speed production and lower costs. Get in touch with us. A Railway specialist will gladly visit your plant and show you how and why Rayco Linter Cotton makes fine cotton content paper.

The RAILWAY SUPPLY & MFG. CO. and Affiliates

Specialists in Grading, Marketing and Processing Cotton Fibers

General Offices: CINCINNATI, OHIO

New York • Chicago • Memphis • Dallas
Detroit • Atlanta • Charlotte

RAYCO
LINTER COTTON

Gilbert Tells Plans For Industrial Film

MILWAUKEE, Wis. — The Wisconsin paper industry will present a thirty-minute motion picture at the state centennial exposition August 7 to 29 at State Fair park. A. C. Gilbert of the Gilbert Paper Company, Menasha, has informed the Wisconsin industry centennial committee here that the movie will show:

The size and scope of the pulp, paper and related industries in Wisconsin; importance of the paper industry to the state; why the industry came to Wisconsin and why it thrived here; the diversified career opportunities in the industry and the importance of paper to everyone.

"The paper industry is anxious to have recognition of its importance to the state's economy, of its splendid social record and the opportunity it lends to young men for employment," Gilbert said.

The movie will be shown in a little theater called "The Paper Theater," Gilbert said.

Special Libraries Association Makes Bibliographies Available

COLUMBUS, Ohio—Numerous rare and unpublished bibliographies on scientific and technical subjects are now available to industry as the result of the formation of a pool of unpublished bibliographies by the Special Libraries Association. The bibliographies in each case have been compiled by technical librarians affiliated with the Association, many of whom are outstanding literature searchers in their respective fields.

The phases of technology represented by the bibliographies are highly diversified. They include organic chemistry, agricultural chemistry, metallurgy, photography, physics, welding, mechanics, combustion technology, and others. Typical of the compilations available are bibliographies on ammonium nitrate, 1907-1947; portable prefabricated bridges, 1930-1944; centrifugal casting, 1910-1942, welding and fabrication of clad steels, 1907-1946; combustion studies in internal engines, 1929-1945; and many other important and extensive compilations from industrial literature.

The pool is housed in the library of Battelle Institute, Columbus, from which loans of the bibliographies are made. Anyone interested in obtaining the complete listing of the bibliographies should write Ralph H. Hopp, technical librarian of the Battelle Library, who serves as chairman of the SLA Bibliography Committee. His committee is also interested in the possible inclusion of other unpublished bibliographies in the pool when it is next revised.

Lakeview Mill Plays Host to Health Group

NEENAH, Wis. — Approximately 100 doctors and nurses of Outagamie and Winnebago counties made a tour of the Lakeview mill of Kimberly-Clark Corporation on April 15. A conference program on industrial health followed. The visitors made the tour in groups of six. Production of various products, such as Kleenex, Fibs, Kotex, Sanek, and Delsey was described by various employes.

Doctor J. B. MacLaren, moderator for the panel discussion, spoke on "General Papermill Accidents," after a talk by Al Johnson, Kimberly-Clark chief safety engineer, on "Creped Wadding Mill Hazards." Johnson discussed various types of accidents which occurred during the last year.

Dr. MacLaren said that while management has not overlooked any protections, employes are still injured because one "can't change the human element, which may be a moment's lapse of attention, a curiosity to see how far and how long one can hold his toe over the edge of the elevator, or pure carelessness." The Kimberly-Clark medical director classified the calender section, winders and digesters, as among the most dangerous divisions of a papermill.

Dr. Paul Brehm, director of industrial units for the State Board of Health, said, "You have seen comparatively little in the way of hazards to a worker in this mill, for it shows what can be done from an engineering standpoint to safeguard the employes."

Another speaker was Harry Nelson, workmen's compensation director for the Industrial Commission, who said that all the guards in the world wouldn't change attitudes of men and that 85 percent of the accidents are attributable to what he described as "that human element."

In the evening, after a dinner at the Conway hotel, the speakers included Henry Boon, vice-president of Kimberly-Clark; John Arnold, president of the Neenah-Menasha Trades and Labor Council, and Mr. Nelson. Mr. Boon gave a short history of the production of Kleenex and Kotex, pointing out that the product now known as Kleenex was developed during World War I as a filter for gas masks.

"Management must be vocal after establishing a good safety program," he said, "because it is dealing with people." He praised the Kimberly-Clark workers for their cooperation in promoting safety and told his listeners that nothing is more important than safety at Kimberly-Clark, where it has become a fixed tradition of the organization.

"A mill can have a good safety program it it will work at it," he added, "and the statistics show that the safest place in the world to be is in a well run American factory."

Over 90% of the pulp mills built have installed Dorr Continuous Recausticizing

WITHIN THE PAST TEN YEARS . . . the most active period in the history of kraft pulp production . . . over 90% of the new pulp mills built have installed the Dorr Continuous Recausticizing System. Of those installing other equipment during this period, approximately half have since converted to Dorr.

To pulp producers, these figures are of no direct importance in themselves. They are significant only because they emphasize the practicability of Dorr techniques and equipment, and recognition of our constant efforts to improve recausticizing practice. Indirectly, they are also indicative of the economic benefits obtained by users of the Dorr System.

We would welcome the opportunity to explain in detail the operating and economic advantages to be derived from Dorr Continuous Recausticizing.

DORRCO

THE DORR COMPANY, ENGINEERS
570 LEXINGTON AVE., NEW YORK 22, N. Y.
ATLANTA • TORONTO • CHICAGO
DENVER • LOS ANGELES
RESEARCH AND TESTING LABORATORIES
WESTPORT, CONN.
SUGAR PROCESSING
PETREE & DORR DIVISION, NEW YORK 22, N. Y.
ASSOCIATES AND REPRESENTATIVES
Dorr Technical Services and Equipment Are Also Available Through Associated Companies and Representatives in the Principal Cities of the World. Names and Addresses on Request.

DORR

RESEARCH ENGINEERING EQUIPMENT

DIGESTED

Weather conditions during the winter months in the South have interfered greatly with the movement of wood. In parts of the Southern Region the supply of pulpwood at some mills has been seriously curtailed as a consequence of excessive rains. Logging operations in parts of the New England region were reported as accelerated during the 6 weeks ending with February. From Maine, which during recent years has led all other states in the consumption of pulpwood, come reports of a continued drought which may result in the lakes and rivers of the State being lower this summer than at any time in the last 100 years. With the exception of the South, the supply of pulpwood for current consumption is more than adequate. Labor, generally, has been in sufficient supply, although in some portions of the South, higher wages in lumber output have taken some men from the production of pulpwood. In the New England district, with no shortage of labor reported, there are indications of wage adjustment demands developing in the Spring. Reports from the several pulpwood regions of the country present a picture of comparative harmony in labor-management relations.—THE AMERICAN PULPWOOD ASSOCIATION.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1948		Corresponding Weeks—1947	
March 6	99.9	March 8	104.5
March 13	100.9	March 15	107.2
March 20	101.2	March 22	105.8
March 27	98.2	March 29	107.8
April 3 (Revised)	100.0	April 5	106.1
April 10	*102.4*	April 12	100.7

COMPARATIVE MONTHLY SUMMARIES

1947						1948	
Jan.	102.1	May	106.2	Oct.	109.5		
Feb.	105.9	June	106.0	Nov.	109.3	Jan.	100.9
Mar.	106.1	July	93.5	Dec.	101.5	Feb.	100.3
Apr.	105.1	Aug.	104.2			Mar.	*100.6*
		Sept.	102.0	Year Avg.	104.3		

COMPARATIVE YEARLY SUMMARIES

	1941	1942	1943	1944	1945	1946	1947	1948
Year to Date	89.9	103.1	88.7	88.0	88.3	99.4	105.0	*100.5*
Year Average	97.4	90.4	87.8	88.1	89.4	101.1	104.3	

NOTES *As of January 10 capacity base increased by 13.3%.*

PAPERBOARD OPERATING RATIOS†

Current Weeks—1948		Corresponding Weeks—1947	
March 6	104	March 8	102
March 13	102	March 15	104
March 20	104	March 22	103
March 27	104	March 29	102
April 3	98	April 5	102
April 10	*105*	April 12	96

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1947	99	103	101	100	101	101	90	99	96	101	99	89	98
1948	99	100	*102*										

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

YOU'LL WANT THIS INFORMATION BEFORE YOU BUY

For fast unloading and handling of pulpwood, for symmetrical stacking or rehandling from corded piles—you'll find the size and type you need in this new Bulletin on—

BLAW-KNOX GRAPPLES

It is complete with photos, diagrams, specifications and performance data of interest to anyone concerned with pulpwood handling. Before you decide on your next purchase write for Bulletin No. 2098.

BLAW-KNOX DIVISION
OF BLAW-KNOX COMPANY
2055 Farmers Bank Building, Pittsburgh 22, Pa.

EDITORIAL

Cost of Stockpiles

Although the pulp and paper companies of Canada have been working to capacity for many months and net profits have been steadily improving, the chief result has been to emphasize the higher cost of doing business. Dividends have not been showing a comparable improvement and many a comon shareholder who waited for the elusive prosperity that was always "just around the corner" is taking a keen interest in any explanations that are being made. He wants to know why he has to wait so long for dividends when the share capital seems to be doing such a good job. The answer seems to be "stockpiling."

Nine leading Canadian pulp and paper companies in their 1947 reports show an increase of approximately 45 per cent in dollar value of inventories over 1946. Part of this increase is made up of increased wood costs, but a still greater part is due to the big pulpwood piles across the country. Much of what shareholders thought they were going to get in dividends has gone into stockpiling inventories. The continued high demand for pulp and paper products makes it necesary, in the judgment of directors, for companies to protect their raw materials supply position by investing in much larger inventories.

The Financial Post, Toronto, in a comparison of inventory position of nine leading Canadian companies in 1946 and 1947 shows that the dollar value of inventories increased by approximately $32.9 millions in that interval. How much of this is due to increased costs and how much to higher physical volume is difficult to estimate, but The Financial Post thinks higher would account for approximately $15.8 millions. If this is correct, it means that these nine companies paid $15.8 millions for inflation and the remainder of the dollar value ($17.1) represents the increased supply of wood.

Of course, wood costs very with the different companies according to the location of the timber limits, but since most of them are now operating in accordance with a sustained yield they are forced to go further afield for additional timber resources, thus adding to the raw materials costs. It is generally agreed that the day of cheap wood is over.

However, with mills operating at or near capacity and woods operations, with improved labor conditions, keeping pace, it is evident that all this increased wood stocks is not intended for immediate use. It is agreed that some of it may not be manufactured into pulp until 1950. A break in the woodpulp or paper market could have sad effects. Pulp and paper company directors seem to be confident that they can keep their selling prices paced with costs, as at present. In the meantime, they are not unmindful of the possibility of declining inventory values and are building up contingency reserves.

Discount Survey

Trade discounts in the paper industry, subjects of a considerable amount of study over the years, and of a great deal of argument over the past few months, still form the basis of a heightened interest among the users of paper. This is to be expected. It remained for the Printing Industry of America, national trade association of the commercial printing shops, to bring the subject forward again this week, when it considered a summary survey of experiences in the larger printing centers, at its meeting in Hot Springs, Virginia.

According to Donald L. Boyd of Huntington, W. Va., president of the association, out of the 46 cities which are major printing centers, paper merchants in 20 have either retained the traditional 2 per cent discount for prompt payment or returned to it after previously changing to 1 per cent. In this group a few of the cities retained the 2 per cent for prompt payment but shortened the payment period as a compromise. Cities where all or most merchants are now on a 2 per cent basis include: Chicago; Columbia, S. C.; Kansas City; Memphis; Miami; Omaha; Raleigh, N. C.; Richmond; St. Paul.

Cities where the situation is divided between 2 per cent and 1 per cent but with a substantial part of the paper merchants back on 2 per cent include: Dayton; Detroit; Fort Worth; Los Angeles; Nashville; Racine; Spokane.

In Atlanta, Hartford, Philadelphia, and St. Louis most merchants are on the 1 per cent basis, with only a few of the larger merchants still on the former 2 per cent rate.

A recent survey in New York by the New York Employing Printers Association revealed that most discounts are officially on the 1 per cent basis but that some printers are still obtaining the 2 per cent discount privately. At least 51 of the 400 paper merchants in New York are either operating on a 2 per cent basis or are privately granting such discounts to preferred customers.

In the following cities 1 per cent prevails: Albany, Cincinnati, Cleveland, Columbus, Indianapolis, Louisville, Milwaukee, Portland, Seattle.

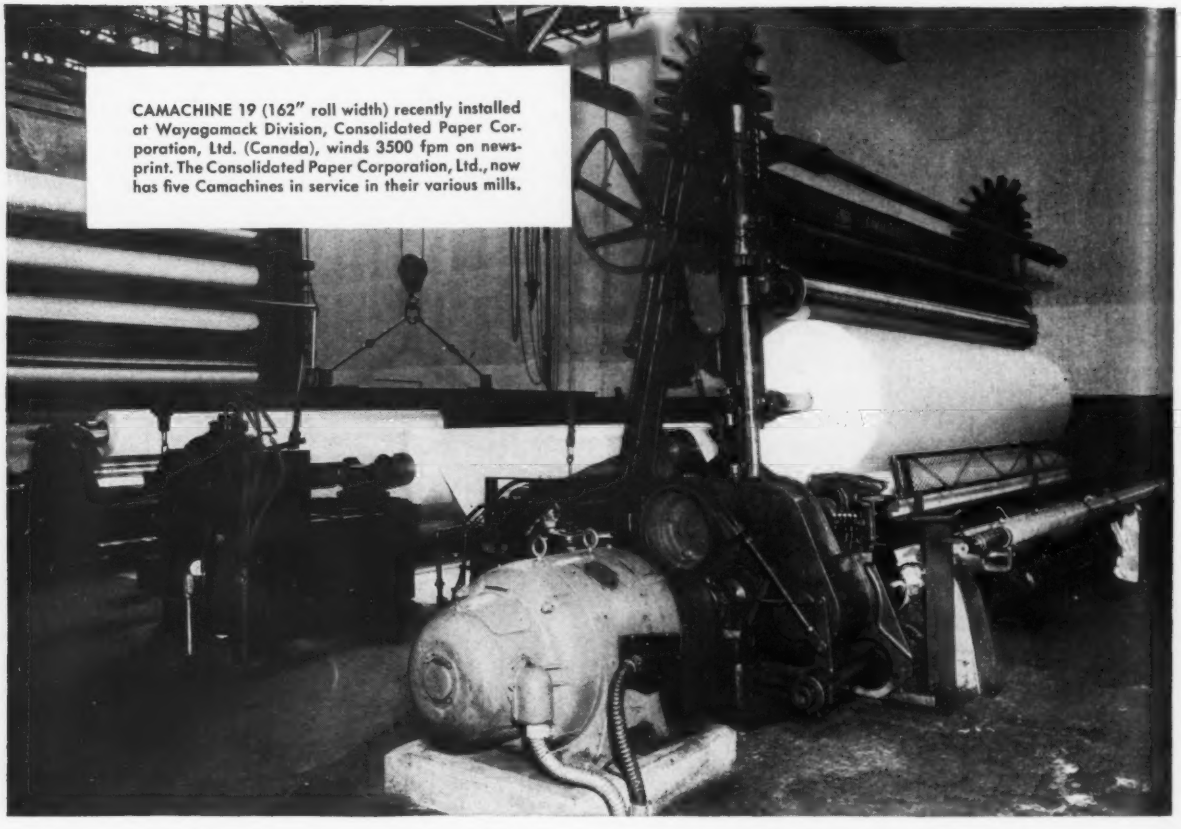
According to Mr. Boyd, approximately 300 million dollars worth of paper is purchased annually by the printing industry through paper jobbers.

W. L. Cook

Editor

Camachines

...for top roll-winding efficiency at amazing high speeds



CAMACHINE 19 (162" roll width) recently installed at Wayagamack Division, Consolidated Paper Corporation, Ltd. (Canada), winds 3500 fpm on newsprint. The Consolidated Paper Corporation, Ltd., now has five Camachines in service in their various mills.

CAMACHINES, the world over, are keeping well ahead of the pace set by the fastest paper mills . . . producing top-quality shipping rolls of news, book, kraft and paper-board at speeds up to 5000 fpm on newsprint.

Clean-cut, wrinkle-free Camachine rolls, wound to uniform density from core to circumference, give smooth performance on the fastest of web printing presses and processing machines. Exclusive Camachine pneumatic web tension assures constant automatic control of the roll density even at the highest winding speeds.

Other exclusive new Camachine engineering features which are optional on the big mill-type Camachines are: the pneumatic brake on drive and idler roll; push-button controlled motor-driven riding-roll lift and roll ejector; and pneumatically controlled pressure on the cutter wheels and cutter spacer bar.

Write for illustrated literature on modern Camachine slitting and roll-winding equipment for all paper mill and converting plant requirements.

Cameron Machine Company, 61 Poplar St., Brooklyn 2, N.Y.

Camachines
FOR FAST, TOP QUALITY ROLL PRODUCTION
...the world over

INDUSTRIAL DEVELOPMENT

Pensacola's New Kraft Center Starts Its Wheels Turning

PENSACOLA, Fla.—One of the country's greatest integrated kraft operations is rapidly swinging into top production at North Pensacola. Multiwall paper bags are now pouring daily out of the new St. Regis Paper Company bag plant as the end product of a concentration which includes two most modern kraft paper mills, supported by an adjacent and long-term supply of wood. The multiwall paper bag is now being used as a container for industrial shipments of over 400 commodities in the construction, chemical, agricultural, fertilizer and other markets.

Output of the Florida Pulp and Paper Company mill, which has been in operation since 1941, has just been joined by that of the new Alabama Pulp and Paper Company mill. Both are wholly-owned subsidiaries of St. Regis and combine with the new bag plant—rated as the largest of its kind in the world—to provide an outstanding example of conversion from managed woodland, to pulp, to paper to multiwall bags.

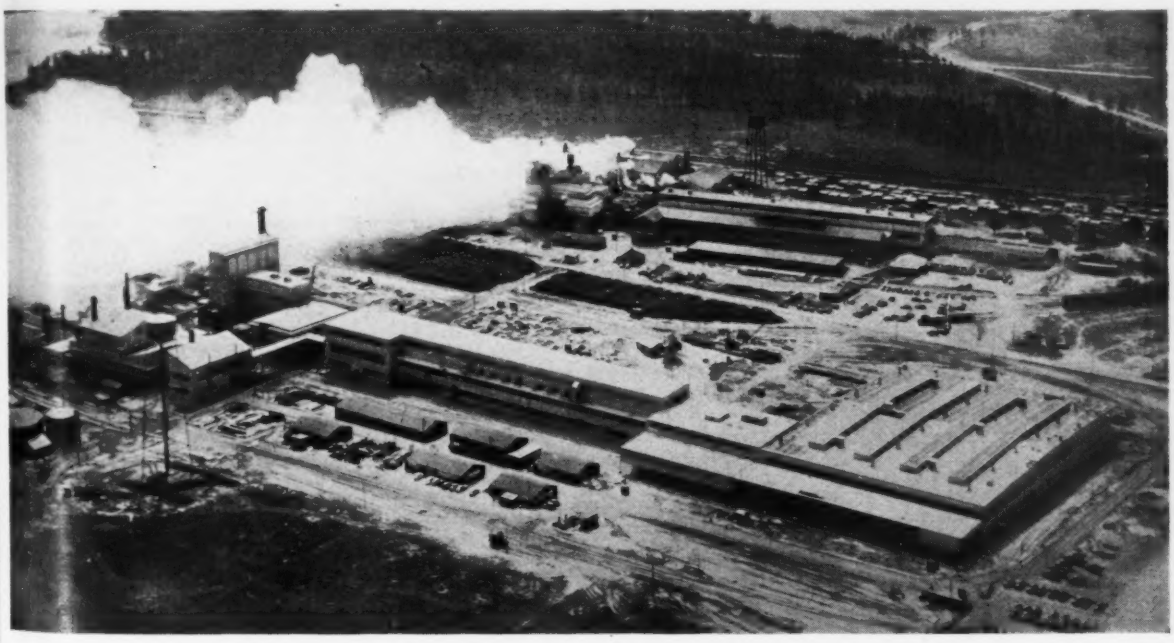
Less than two years ago, St. Regis announced its entry into the kraft industry of the South through the acquisition of the entire outstanding capital stock of the Florida Pulp and Paper Company from James H. Allen and his associates, in exchange for St. Regis stock. At the same time, St. Regis acquired an interest in the Alabama Pulp and Paper Company, which was engaged in building a kraft paper mill on a site adjacent to that of the Florida mill.

Through stock purchases and the exercising of existing options, complete ownership of the Alabama company was acquired by St. Regis near the end of last year.

The new Alabama mill, which recently entered production, was specially designed and equipped for the manufacture of special, heavy-duty kraft paper and has a rated capacity of 250 tons a day. Capacity of the Florida mill is in the neighborhood of 200 tons of kraft paper daily, and the combined output of the two mills is sufficient to make 500 million multiwall bags annually.

The new bag plant when in full operation will have a capacity for making 250 million multiwall paper bags annually, and has been so designed that at a later date it can be expanded to a capacity of half a billion bags annually. In addition to its multiwall bag capacity, the plant will have a capacity to produce a million sugar pockets daily.

At the North Pensacola bag plant there will be produced all types of multiwall bags, including sewn valve and sewn open mouth, pasted valve and pasted open mouth, as well as five and ten pound consumer sugar bags, known in the trade as sugar pockets. In addition, the plant will manufacture multiwall containers in which these sugar pockets are shipped to the distributor.



NEW KRAFT CENTER RISES ON THE OUTSIDE OF PENSACOLA

New $10 million Alabama Kraft mill and $3 million St. Regis multiwall bag plant round out huge Pensacola "Kraft Center." The new kraft mill (center foreground), designed to aid assembly line production and with a daily capacity of 250 tons of specification kraft paper made especially for multiwall bags, is joined to the pulp mill of the Alabama Pulp & Paper Company (left foreground). The flow of paper from the new mill is fed into the adjoining new multiwall bag plant (right foreground), which is geared to a capacity of 250 million bags a year. The Florida Pulp & Paper Company mill (left background) adds an additional 200 tons of kraft a day. Total paper production of the two mills is sufficient for a half billion multiwall bags a year. The wood yards between the two plants complete the highly integrated operation.

INDUSTRIAL DEVELOPMENT

Paper Trade Journal, in this new section, proposes to make space available for discussion of administration and operational problems of the pulp and paper industry, as well as for the presentation of independent studies and research on technical and engineering subjects. Noteworthy features of paper mills, converting plants, associated industries and institutions also will be presented, as they become available. These pages will be open to all who are qualified to discuss subjects within these limits. Manuscripts, submitted for approval, will be welcomed.—E. P. McGINN, Industrial Editor.

The most modern of equipment is being installed in the bag plant, including six multiwall tubers with all of the auxiliary equipment for sewing, valving and bottoming; two container bag machines and five hugar pocket bag machines; also the required complement of multiwall webb printing presses.

During the first year of operation, the bag plant will employ in the neighborhood of 400 workers, with the total to be gradually stepped up to 1000 within the next several years. During the past six months, the company sent a nucleus of workers from Pensacola to its northern factories, where they underwent a training course in bag making and printing.

The unique integration in over all production at the Pensacola "Kraft Center" of St. Regis naturally begins with the great supplies of economically accessible wood.

Such a supply is vitally essential and is the greatest single factor of insurance for continuous operations, and St. Regis, a champion of conservation and reforestation, now controls over 1,800,000 acres of woodlands, advantageously located to provide its needs on a long-term basis.

Adequate Southern timber holdings and sound forestry practices appear to assure a long-time wood supply for the Pensacola "Kraft Center" and in this connection James H. Allen, president of both the Florida and Alabama companies and a director of St. Regis, recently pointed out that the sound and basic economics attending the kraft paper industry of the South, and the assured safety it holds out to investor, stem notably from the self-perpetuating character of the raw material used by this industry.

New De-Inking Process Claims Many Economical Features

CHICAGO—The Pulp Processing and Licensing Corporation, 154 East Erie Street, is introducing a new and apparently successful process for removing all inks, coatings, and sizings from waste paper. Actually the process consists of several methods of treatment each of which is suitable for removing certain types of inks or coatings. For example, old newspapers are processed at room temperature without any cooking and using cold water washings.

The following advantages are claimed for the system:

1. Low cost of process due to use of chemicals which are cheap and plentiful.

2. No special equipment required.

3. High quality and color in the cleaned stock, depending, of course, on the quality and cleanliness of the waste paper used.

4. The process is applicable to any kind of waste paper including coated, lacquered or varnished stock and will remove any kind of ink including offset, flashdri, metallic, or rotogravure.

The recovered pulp is entirely free of all ink regardless of the many types and colors of inks used in printing—even to rotogravure, offset printing, gloss ink, or even where the printing may have been subsequently lacquered or varnished as in the case of magazine and trade paper covers and inserts. The owners of the process, however, state that it would be foolish to claim that any one process or any one combination of chemicals will do all of these things — so their process treats them according to simple predetermined classifications. For instance they process waste newspapers by an entirely cold process — no cooking at all and all washings with ordinary cold water. The pulp coming out clean, clear, bright and strong.

When it comes to treating magazines, trade papers, and other periodicals, it becomes necessary to not only remove the ink regardless of the many colors that may have been used, but also any clay coating, or any varnish or lacquer coatings. And this they do in one stage and not in subsequent operations. Of course the matter of washing is highly important in order to get rid of the loosened and softened inks—the coatings and their binders—the sizing originally in the paper—and of course the treatment solutions.

The pulp recovered from magazines is usually of a much whiter and better grade of pulp and is stronger and has more uses than has the pulp recovered from newspapers. However, when a beautifully white pulp is desired for reuse or for blending purposes or for use in the lining of board or carton stocks, this recovered pulp can be easily and quickly brightened by the use of a little of the regular and well known bleach liquor. Usually the maximum can be reached with under a dollar per ton of bleach liquor, it is asserted.

The owners make the assertion that they have never encountered a printed sheet of paper that they have not been able to remove all of the ink from successfully and completely and at a cost that will make the recovered pulp cost far below the present day value.

The present day paper and pulp shortage makes it necessary that something along this line be adapted in order to help in the present situation for it is admitted that far too much of our paper supply is used especially in the printing of publications that are quickly read and discarded — usually destroyed. A much greater volume of these publications could be saved and collected were there an economical process available for their treatment and pulp recovery. It is claimed that this new process will make possible an almost unlimited satisfactory pulp supply—right now—so it is possible to quickly relieve present day pulp shortages.

It is stated that in operating this process there is no fire or health hazards — that the chemicals are cheap and available in large quantities—and that most paper and board mills can be set so as to be producing pulp by this process in from a few days to a few weeks.

The corporation has qualified engineers available to visit mills who are interested in such work—and they will make surveys and reports as to the mills present equipment suitability — and it is then intended that these engineers advise and train the mills operating force in the successful use of the process in its various adaptations.

The licensing corporation does not intend to go into the pulp recovery business itself but it does intend to carry on a vigorous campaign and encourage in every way — the saving, gathering and turning in of many types of printed periodicals heretofore considered undesirable for deinking and of no value.

NEW MENGEL PLANT AT FULTON, NEW YORK

The Mengel Company new box plant at Fulton, N. Y., of simple and functional design, provides a production layout of maximum efficiency. The enclosed, all-weather loading area at the left will accommodate four thirty-five ft. trucks. Doors are mechanically operated. A rail spur enters the rear of the building, where incoming rolls of paper are unloaded and finished boxes are shipped out. Two monitors, included to permit more natural light to working area, are partially visible in the top center of the picture. The H. K. Ferguson Company, industrial engineers and builders of New York, Cleveland and Houston, designed and constructed the factory.

Mengel Builds a Box Plant For Maximum Efficiency

FULTON, N. Y. — The Mengel Company of Louisville, Ky., in its recently completed corrugated box factory in this city aimed at a new factory layout that would result in maximum operating efficiency. From the outset Mengel representatives pooled their experience with engineers of the H. K. Ferguson Company, industrial engineers and builders of Cleveland, New York and Houston, in the preliminary planning—which included site surveys, equipment layouts, cost investigations and structural studies. The result was a quick and confident decision to go ahead with the project, speedy construction, early occupancy and a smoothly operating factory.

Before selecting a site the preliminary engineering had progressed far enough that all of the requirements were well known. Full consideration was given to the need for railway, highway, power and water connections.

The building dimensions are approximately 500 by 150 feet. The west end of the building is taken up by administrative offices, laboratory, locker room and trucking docks. Adjacent to the main building at the east end is the boiler room which houses the two 300 HP oil-fired boilers which provide steam for heat and process requirements.

Because of the severe winters in this area all receiving and shipping operations are entirely within the heated building. A railway spur enters from the east through a large track door at the northeast corner and extends a distance of 360 feet along the north wall. This permits as many as six cars within the building and they may enter with full loads of paper in rolls and be shipped out loaded with finished boxes.

The truck dock is a depressed area in the northwest part of the building large enough for four 35 foot trucks. The trucks are backed into the building through four overhead doors in the west wall. This all-weather treatment of receiving and shipping greatly increases the efficiency of the loading and unloading operation.

An area about 200 by 90 feet in the northeast part of the building adjacent to the railroad spur is used for storage

WHERE MENGEL MAKES CORRUGATED SHEETS

The process for manufacturing corrugated boxes at the Mengel Plant in Fulton starts with this corrugating machine. The machine handles the complete fluting, gluing and cutting operation. The plant has a specially treated floor to give hard wearing surfaces for fork lift truck operations.

of paper in rolls used in the process. Just south of this area along the south wall is the corrugating machine. With the exception of a space about 100 by 60 feet adjacent to the trucking dock and the end of the railroad spur that is used for box storage, the east end of the building is used for the various box making operations.

The building was designed so that improved machinery may be installed without interfering with present production. In order to assure this, it was necessary to design for possible relocation of equipment and rearrangement of operations. This led to the necessity of flexibility in the overall design with wide spacing of columns and constant clearance to roof beams. The temporary or south wall was built of brick spandrel with high continuous sash and cemesto board above the sash. Thus an economical wall was provided with no sacrifice in appearance.

The 60,000 square feet of storage and manufacturing area is a well lighted, heated and ventilated building with 17 foot 8 inch clearance to the roof framing, and a hard concrete floor that can stand maximum abuse from the large lift trucks handling the paper in rolls and pallets of finished boxes.

Natural as well as artificial lighting was considered desirable, and two monitors were provided to run the length of the building with 4 lines of continuous sash 6 foot 9 inches high. These monitors with the wall sash are very satisfactorily providing the necessary day time light. The artificial lighting medium is fluorescent fixtures giving an intensity of 25 foot candlepower at working level.

The factory area is heated with steam heated unit heaters with anemostat diffusers. The flat roof is provided with 1 inch insulated board over precast concrete channels.

Because of the moist condition over the corrugating machine, considerable thought was given to the construction of the roof deck. From a standpoint of economy and serviceability a comparison was made between precast concrete, gypsum, steel plank, steel deck and wood plank. It was decided that the use of a dense precast concrete would result in a saving in maintenance cost and give long-life service without any appreciable added installation cost. The addition of a 1 inch thick insulation board under the composition roofing contributed to a sizable reduction in the heating requirements and insured a more comfortable building in both winter and summer.

A very important part of this type of plant design is the floor construction because of the severe wear from the heavy roll lift trucks. The earth fill under the floor slab was carefully selected and firmly compacted to give uniform support to the heavy loads. The slab was reinforced with extra heavy wire mesh and given a separate 1 inch finish of special mix and surface hardening.

An unusual feature of the building is a new type of roof framing that was developed especially to meet all the requirements of this new modern plant, but which should have wide application in industry. The 60 foot and 45 foot roof beams were given intermediate support by diagonal steel members placed in the monitors. This made it possible to use much longer roof spans than would ordinarily have been practical without using trusses. Thus were combined the advantages of economy, clean modern interior appearance, easy maintenance of steel simple fabrication and erection, wide column spacing, and a minimum height of building. A considerable saving in steel tonnage was realized by taking full advantage of the effect of these diagonal hangers on the beams and column.

The structure was carefully analyzed for unbalanced roof loading, monorail loads, temperature changes and wind loads in order to insure a safe design under the most severe conditions of loading.

The result has been an exceptionally pleasing structure that has already been subjected to a severe loading test during one of the heaviest snow falls this area ever had.

In the administrative office the concrete floor is covered with asphalt tile and the plastered ceiling is treated with acoustical tile. Other structural materials in the office area include steel frame, brick walls, tile partitions and concrete floors.

Dry Spray Method Is Offered To Eliminate Offset Smudge

NEW YORK — Ever since man invented printing — a process involving the application of a wet, viscous substance, impregnated with pigment, onto one sheet after another—the problem of offset has been a thorn in the side of everyone concerned with the production of printed matter. The term "offset or offsetting" as here used relates to the transfer or smudging of the printed surface of one sheet to the back of the next sheet delivering thereon, and is not to be construed as a reference to the lithographic process.

It should be obvious, according to Herbert Cole, president of the Craig Corporation, that the reason wet sprays help prevent offset is due entirely to the dry powder or solids used in the spray mix, the liquid serving no purpose in the final result. Why then, he asks, is it not possible to apply dry powder by itself and as close to the sheet as the delivery end and construction of the press will permit? Isn't it reasonable to strive for uniform and even distribution of a non-toxic powder to spray only a predetermined quantity, depending upon the character of the job being run — to use low pressure, thereby eliminating the clouds of mist; to eliminate coating of equipment and installation and cost of maintenance o ventilating systems to say nothing o the personnel problem? This ideal solu is something to strive for, especially if the results desired could be accomplished without any effect on the printed sheet, without any sign of spray powder or offset on the finished product?

Many attempts have been made in this direction within the past fifty years or so, all of which have met with failure for one reason or another, either due to inability to control the volume of powder deposited, individual separation of powder particles, uneven distribution, failure of mechanical means for continuous operation, humidity, moisture fouling the powders, use of improper dry powder, etc.

As a result of close contact with the many problems and ramifications involved, about ten years ago a beginning was made in an endeavor to accomplish this desirable result without creating undesirable conditions. Many obstacles had to be hurdled, mechanically and chemically, not only to develop equipment but also to develop dry spray powders that would accomplish the sought-for result. As one test after another was made, it became apparent that, in order to accomplish the desired result, absolutely dry individual particles of powder would have to be applied to the sheet, at low perssure. The way to get this powder onto the sheet was to have it applied as close to the sheet as the delivery of the press would permit. The powder would have to be of high specific gravity so as to quickly precipitate and not float throughout the plant. Also, in order to apply absolutely dry powder, thoroughly dry air would have to be the separating and motivating medium.

It was found that ordinary oil and water filters, commonly in use on compressed air lines, did not remove sufficient moisture with the result that when this air came in contact with the dry powder the particles of powder, instead of separating, would flocculate or lump up. This also was true with dry powders that were exposed to normal atmospheric conditions of a room. It became important, therefore, that a filter be used to trap the oil in the air line and that a dehydrator had to be developed that would deliver air free of moisture to a dew point of approximately zero. It was only when these details were perfected that it became possible to spray dry powder satisfactorily.

This led to the development of a unit that is panel mounted, weighs approximately 40 pounds, and consisting of powder supply tank, spray tank, filter, dehydrator and the necessary fittings for connecting and operating.

From a maintenance standpoint there is little to worry about. The unit is entirely pneumatic in operation and all parts are either aluminum, brass, or stainless steel. It is easy to install and simple to operate. It requires no floor space and can be made into a portable unit. There are no moving parts, nothing to wear out, nor can the mechanism clog or choke-up.

Some of the most prominent printing plants in the country cooperated in this endeavor by acting as guinea pigs during the development period, and it has been through their encouragement and assistance, which is gratefully acknowledged, that it is now possible to announce positive results are being obtained.

The basic principle of this recently perfected method of offset prevention is founded on the application of completely dry powder, at very low pressure, evenly upon the entire surface of the printed sheet. This powder then will act as a barrier or air space and so prevent the next printed sheet from coming into contact with the wet surface of the previously printed sheet. This barrier creates greater air space between the sheets which promotes faster oxidation of the ink. Actually a very thin film of powder-laden air is applied to the entire surface of the printed sheet which hastens drying.

This is the principle on which the development was predicated except that under actual production running conditions an excess of powder could not be applied to the sheet and then shaken off, so special powders with very spare but thorough coverage had to be formulated of such materials as are compatible with printing and lithographing inks which, when applied to the surface of the sheet serves the purpose for which they are intended, and also becomes an integral part of the ink or paper as it dries, with the result that no trace of it is visible either to eye or touch.

The procedure used in this offset prevention method is to inject filtered and dry air into a tank containing dry powder, completely dispersing the powder into the air and forming separate, minute particles, creating a cloud of powder-laden air. This cloud of powder-laden air is then carried, through the medium of extremely low air pressure, to a ⅜ inch diameter spray tube that is attached to the press and set transversely across and within a few inches of the printed sheet. Through tiny ports in the tube the dry powder is then precipitated onto the printed sheet. The pressure required to create this cloud of powder-laden air on the average class of printing will vary from one to three pounds, depending on the nature of the work and size of sheet. At the point of application to the sheet, this air pressure usually is not in excess of one or two ounces, frequently less. However, on metallic paper or board, carton stock, pliofilm, foils and other hard finished surfaces, and where heavy applications of ink are involved, slightly higher pressure may be required.

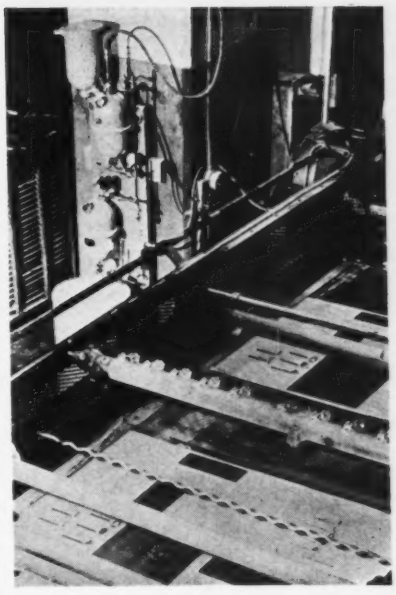
In order to insure uniform distribution of the powder across the entire sheet the spray tube is scientifically shaped and drilled to deliver confined even sprays of powder across the full width of the form. A breather attached to the far end of the spray tube collects any excess powder. Needle valves are located at the intake and breather ends of the spray tube in order to relieve pressure at either end, if necessary, so as to balance the distribution of the powder across the entire sheet.

As an integral part of the spray unit the development of spray powders paralleled the progress of the unit. Several types of analytically tested and approved powders, varying in particle size, are available according to the nature and character of the work to be sprayed. Experience has proven that two basic kinds will handle the normal run of work in letterpress, lithographic, or carton plants. A fine particle size is used generally on smooth stock and for overprinting of colors. A large particle size generally is used on rough surface stock and heavy forms once through the press. Even though the printed sheet may feel slightly rough after being sprayed, no trace of this is visible in any way the next day. Furthermore, the high specific gravity of the powder precipitates it onto the printed sheet as it leaves the spray ports.

Due to the extremely low air pressure employed to spray dry powder and applying it so close to the printed sheet, powder is confined to the sheet or delivery board or within that immediate area and does not get into the moving parts of the press. Being dry as well as non-adhesive, any powder that might fall out of bounds is readily removed, either by wiping up with a dry rag or applying a slight blast of air.

This new method of offset prevention, besides overcoming the objectionable features of other methods of spraying, has additional advantages, among which are ease and economy of operation. The benefits obtained do not stop with the prevention of offset but continue throughout the completion of the printed job. By using these specially formulated dry powders "slip" is added to the printed sheet instead of "stick," thus producing smooth, clean sheets which may be piled in lifts much higher than previously possible, saving floor space. The printed sheets are easier to feed, job, handle and cut.

Practical demonstrations in a variety of pressrooms, running on all sorts of stock, under all kinds of production conditions, have proven the validity of all these principles. A 25x38 coated sheet of four-color process work, run on a No. 46 two-color Miehle at 2500 per hour, used less than one pound of dry powder for 60,000 impressions. A carton plant, running a gloss ink, soap carton on a 5/0 two-color Miehle, produced only 58 sheets to a rack with paraffin spraying. By utilizing the aid of dry powder, the same job was run with 1900 sheets to the pile, with no



Typical dry spray installation

trace of offset, sticking or picking to the bottom sheet. This was all that could be piled because it would have been impossible to remove the lift from under the press, which was mounted 12 inches above the floor! On metallic stock, with the aid of dry powder, as many as 30 sheets of heavy board in cases of heavy ink coverage have been racked as compared with three or four formerly piled on a rack, and, where stock and coverage is light as many as 1800 sheets have been delivered directly into the pile without offset.

In a lithographic plant a job requiring nine colors could not have been run except with the aid of dry powder. On a modern 2-color offset press, running carton work at top speed, 2000 sheets of 68 inch board are being stacked to a pile without offsetting. Four-color coffee bags were being printed on rotary presses, using regular inks, at 3000 to 3500 per hour, stacking short lifts. Using dry powder and changing to gloss inks, production has reached 7000 per hour with higher piles. Printing with high gloss finish could not be accomplished without this aid. Increased production efficiency was obtained through better stack delivery and improved stacking by using dry powder. It was found, also, that dry powder helped materially in the suppression of static at the delivery point.

Today the dry spray method of preventing offset is being used on varied makes, styles, and sizes of printing and lithographic presses, rotary or flat bed, web or sheet fed, rewind or sheet delivery, including tag, envelope or ticket presses, coating and varnishing machines and other special applications to overcome sticking, picking, or blocking. This applies to heavy forms, multicolor or process printing, gloss inks, decals, and over-printing or spirit varnishing.

NEW LITERATURE

Industrial Chemical Sales Releases Informative Booklet

NEW YORK — A 48-page, fully-illustrated booklet entitled "Precipitated Calcium Carbonates—Their Manufacture, Properties and Applications," has just been published by the Industrial Chemical Sales Division, West Virginia Pulp and Paper Company.

Written by Robert H. Buckie, A.C.-G.I., the two-color booklet records the outstanding data concerning precipitated calcium carbonates, products of Industrial Chemical Sales. Both Snow Top, which meets U.S.P. requirements, and Caltec, for various technical purposes, are treated in detail.

The booklet has four principal parts — introduction, manufacture, properties and applications — with two appendices and a bibliography. It is fully indexed for the convenience of both reader and researcher.

In one part, the publication discusses natural calcium carbonate, its uses in the chemical industry as well as by-product and synthetic carbonates. Principal varieties of calcium carbonate found in nature, commerce and industry are tabulated.

The section of manufacturing covers every phase from the advantages of the method adopted, to the packaging of the final product. A flow diagram for their manufacture is included.

The booklet also gives in detail the methods of measuring whiteness, test procedures, particle size data, and chemical properties. Graphs, tables, charts and electron micrographs are included.

A review of the salient properties and a discussion of the field of applications for both qualities of precipitated calcium carbonate are covered in the chapter on applications. Powder components, cosmetics, dentifrices, basic food products, baking powders, enrichment compounds, pharmaceuticals are some of the uses discussed for USP grades. The industrial applications of technical grades include coating pigment and paper fillers, rubber pigments, extender for paints, cleaning and polishing and many other uses.

The appendices are devoted to the use of the microscope for dimensions and counts of particles and to the Microsizer, a new instrument designed by the company for determining the sizes of particles occurring in finely divided materials such as pigments and fillers for paper making. A schematic layout of the Microsizer is included.

Copies of "Precipitated Calcium Carbonates—Their Manufacture, Properties and Applications" may be obtained from Industrial Chemical Sales Division, West Virginia Pulp and Paper Company, 230 Park Avenue, New York City.

Jones Bulletin Describes Refiner Maintenance

PITTSFIELD, Mass. — A new 12-page bulletin, No. EDJ-1012, replete with maintenance data pertaining to the Jones High-Speed Refiner, has just been published by E. D. Jones & Sons Co. This bulletin, primarily issued for users of the Jones High-Speed Refiner, gives data and illustrations on the use of the Refiner such as: leveling and setting instructions; general arrangement; parts diagrams and lists; lubricating information, and refilling instructions. A copy is available to users of the Refiner upon request to E. D. Jones & Sons Company.

Brown Inaugurates Looseleaf Handbook on Instrumentation

PHILADELPHIA—To keep pace with the tremendously accelerated interest in instrumentation and automatic control and to augment information published in the technical and trade periodicals, the Brown Technical Section has undertaken the preparation of a perpetuating looseleaf Handbook of Industrial Instrumentation.

Hundreds of industrial instrument applications will be taken up—one at a time. Each application will be described on a separate sheet or two-page folder, depending upon the scope of the subject. These sheets or folders, identified as Instrumentation Data, will be coded according to the U. S. Government Classification of Industries and will be punched for convenient notebook filing. The sheets will be prepared by engineers in a strictly engineering fashion and will be devoid of the commercialism often prevalent in catalogs and company-published brochures.

First releases include *Paper Machine Speed Measurement*, Brown Instrumentation Data Sheet No. 2.9-9, which explains use of electronic tachometers for indicating and recording paper machine speed. An auxiliary switch which enables instrument to record the time and duration of paper breaks is also described. A system for recording the speeds of several machines is fully explained.

Control of Multiple Effect Evaporators, Brown Instrumentation Data Sheet No. 2.9-12 tells how more efficient evaporator operation can be achieved through engineered instrumentation. The sheet is complete with drawings of a typical system, testing of component parts, and explanation of operating principles.

Centralized Control of Continuous Causticizing Plant, Brown Instrumentation Data Sheet No. 2.9-15 describes instrumentation for modern continuous causticizing plant. This sheet includes a line drawing of typical installations, a listing of component parts, and description of operating principles.

For further information write the Brown Instrument Company, Philadelphia 44, Pa.

Goodrich Bulletins Multi-Cord Belting

AKRON, Ohio—A new catalog section on its Multi-Cord belting which it recommends for the severest drives has just been published by The B. F. Goodrich Company, Okron, Ohio. Copies are available upon request.

The belting is recommended for installations where heavy loads, high speeds, small pulleys and limited take-up impose tremendous strain on the belt. Construction is pictured and described, advantages cited and data outlined.

Eriez Describes Its Giant Separator

ERIE, Pa. — A "Giant" heavy duty non-electric permanent magnetic separator for tramp iron removal is the title of a new two-page, two-color bulletin issued by Eriez Manufacturing Company, 3290 E. 12th St.

It contains factual information on how to remove tramp iron non-electrically from heavy loose flowing materials such as coal, rock products, paper slurries, grain, bulk foods, chemicals, etc. Its general use, magnetic strength, construction and advantages are also given. Illustrations show typical installations in various industries.

Describes Liquor Decantrol And Chemical Feeders

LINDEN, N. J.—A bulletin on *Decantrol and other Chemical Feeders* has just been published by Liquid Conditioning Corporation which explains the purposes and applications of the different control systems for feeding chemicals to raw water to correct or eliminate impurities, and describes in detail the various types of apparatus available for the purpose.

A section in the bulletin of special interest describes the latest development in chemical feeders known as the *Decantrol,* which embodies several advances over older types of feeders.

Illustrations include drawings and photographs showing the principles of design and operation of the different types of feeders. Copies of this informative bulletin can be obtained by addressing Dept PT, Liquid Conditioning Corporation, 114 East Price Street, Linden, N. J., for Bulletin 14.

EQUIPMENT AND SUPPLIES

Redesign Gas Burner Units For Immersion Heating

CLEVELAND — Newly-engineered immersion heating burner assemblies produced by the Industrial Division of Bryant Heater Company, 1020 London Road, Cleveland 10, Ohio, involve scientifically-designed spacer cages which insure the entrainment of the required amounts of secondary combustion air in gas-firing immersed tubes for heating water, oils and other liquid solutions. The Coil Cages are furnished separately or in ready-for-installation assemblies complete with mixers and associated equipment.

The atmospheric type Coil Cage burner comprises a gas cock, low pressure injector, flame-retaining burner nozzle, and coil cage with pilot, usable with gases having BTU contents of from 450 to 3200 BTU, at head pressures from 3" to 12", the atmospheric burners are rated from 27,500 to 350,000 BTU per hour. Coil pipe diameters from 1½" to 6" are accommodated.

Blast type Coil Cage assemblies permit higher capacities by utilizing combustion air under pressure. These units involve a zero governor for controlling gas supply and a pressure type mixer. A centrifugal blower for pressure air can be supplied as an element of the packaged assembly if required. Using air at 4 oz., 8 oz. or 16 oz. pressure, the blast assemblies deliver up to 1,400,00 BTU per hour.

Complete specifications of coil-cage equipment are contained in Bulletin IC-1 available on request to the company. The bulletin also contains four pages of general design data, heating calculations and selection tables on immersion heating.

Paisley Products Offers New Case Sealing Glue

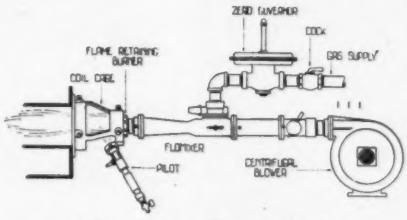
Paisley Products, Inc., Chicago and New York, originator of many special packaging adhesives and adhesive application techniques, is now in production on a new shipping case sealing adhesive designed especially for automatic case sealing machines. Designated Boxseal glue, it will successfully and speedily seal the flaps of fourdrinier kraft, cylinder kraft and jute lined corrugated containers, as well as the solid fibre types, according to the manufacturers. Although emphasis is placed upon Boxseal as an automatic machine sealing adhesive, it can also be applied by hand brushing.

Boxseal is described as a liquid converted starch derived adhesive. The method of manufacture is said to increase immensely the adhesive power obtainable from the raw materials. It enables the glue to coat a thinner, more cohesive film on the container board without excessive penetration into the board fibres. The glue remains on the surface to make positive contact with the container flaps when they are pressed together.

The makers point out that Boxseal, unlike ordinary starch derived adhesives, remains in a fluid condition indefinitely, permitting it to be piped directly to the machine glue pans without danger that the adhesive will solidify in the pipes and cause stoppages.

Boxseal is reported as an extremely fast setting adhesive in its price range, and has successfully operated on machines having short six and eight foot pressure units. Dilution of the glue is dependent on the porosity of the container board in use, ranging from 15 percent to 50 percent by volume, and a setting speed range of 20 seconds to 60 seconds. At 25 percent dilution, tests show 85 percent fibre tear on containers in 35 seconds.

Further information about this product and a generous trial offer plan can be obtained by addressing Paisley Products, Inc., 1770 Canalport Avenue, Chicago 16, Illinois, or 630 West 51st St., New York 19, N. Y.



BRYANT GAS BURNER UNIT
Typical Open Blast Burner—Immersion Coil Combination

Cut-away section of revolutionary new leak-proof Fulton Sylphon valve, made in stainless steel and in other materials, designed for freedom from maintenance impossible with conventional valves

Manhattan Rubber Offers New Ray-Man V-Belt

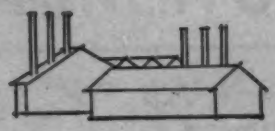
PASSAIC, N. J.—The addition of the newly developed Ray-Man V-Belt to its line of industrial rubber products has been announced by Manhattan Rubber Division, Raybestos-Manhattan, Inc. The new Ray-Man V-Belt was developed by Manhattan's engineers to meet the need for a belt possessing features particularly applicable to tough rugged drives. According to the manufacturer, the engineered strength members have been especially designed for this type of service, and added features of oil, heat and static resistance provide a belt with qualities for unusual service requirements.

Farris Introduces New Pinch Valve

PALISADES, N. J. — A new pinch valve for controlling the flow of many highly abrasive and corrosive materials through a line has been developed by Farris Engineering Corp., 634 Commercial Avenue, Palisades Park, N. J., to be known as the Farris Pinch Valve.

This new product is said to offer many advantages over the conventional type of metal valve. It allows full pipe capacity with equal pressure drop and provides for simple installation and automatic alignment. A smooth bore minimizes incrustation and permits easy cleaning by tapping or flexing with a mallet. The valve eliminates water hammer and absorbs vibration, thus preserving other equipment on the line. Because of its streamlined design, it can be placed in throttling position without undue cavitation or wire drawing. It has a simple control mechanism, no internal parts to wear or cause obstruction, and is ideal for outdoor service since it will neither freeze nor break.

Design and materials of the Pinch Valve mechanisms are consistent with the chemical corrosion and abrasion services for which these valves are recommended. The mechanism, which allows for replacement or repair without taking the valve out of service, is located in mid-position of the body by a bracket which also keeps the mechanism in an upright and 90 degree position from the Pinch Valve body. Material standards are semi-steel frame and parts with a Type 416 Stainless Steel stem, double threaded. Available in sizes from 1 to 10 inches for working pressures up to 100 lbs. also from 12 to 96 inches. Working pressure has 4-to-1 safety factor.



in

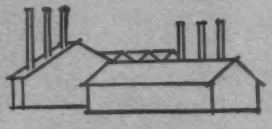
new

paper mills

the

trend

is to



HERCULES **Size**

Those new paper mills springing up around the country are the last word in engineering, machinery, and technology. While one new plant may differ slightly from another, collectively they indicate the trend to Hercules size in today's paper-making. A new paper mill deserves the *best*. That's why the modern trend is to Hercules size—a quality product backed by helpful technical service.

HERCULES

SIZING MATERIALS AND CHEMICALS FOR PAPER

HERCULES POWDER COMPANY

961 King Street, Wilmington 99, Delaware

SECTION OF THE

TECHNICAL ASSOCIATION
OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Modern Practice in Sulphite Mill Acid and Recovery Plants*

By F. J. Hoar[1]

Abstract

An outline of the process arrangement for sulphite acid preparation is given. Current acid producing methods emphasize control of the composition of raw and cooking acids. Countercurrent absorption towers at atmospheric and higher pressures, offer this control in the preparation of raw acid and cooking acid. Raw acid is prepared in the acid plant while cooking acid is a product of the recovery plant. Economics of acid making are presented.

Acid storage should not be affected by atmospheric conditions. Cooking acid should be of any desired chemical balance or composition and retain recovered raw materials from the cooking process. Acid making should be a closed cycle process.

The production of sulphite pulp has been treated freely in technical essays and articles, but the significance of plant design and arrangement has not been analyzed to present the close operating function and association of the acid making and recovery plant departments to produce the quality and quantity of product desired.

"We have come a long way since the early experiments by Ekman, Mitcherlich, Ritter, and Kellner. Cooking cycles have been slashed from 40 to 60 hours to 9 hours and less. Improvements in manufacturing led to certain specifications for the end product. As these specifications became more rigid, strict control of every factor affecting the manufacture was made necessary.

"Next to the wood itself, there is no single factor of more importance for the production of specification pulp than the cooking acid. If the acid has not the proper proportion of free to combined SO_2, the quality will suffer. If the acid has not sufficient strength, the pulp quality will suffer" *(1)*.

Operators in sulphite plants have been limited by equipment arrangement to the extent that the closed cycle feature of operation in the sulphite mill has been disregarded. New alloys and equipment have also revised the picture to a large degree. With the introduction of different acid bases into the sulphite acid making process, the necessity of recovery of chemicals and energy has required careful engineering design of process arrangement to insure the economics of the process factors.

The sulphite mill operator, in a general sense, has lacked the proper tools to control the process variable; also adequate equipment has not been available for commercial installation until recent years.

Absorption Systems

In the process picture over the period since 1867 have appeared definite differences in thinking and planning on the part of engineers, technical men, and operators. The historical reference to acid making and the means employed demonstrates the variety of technical practices coupled with the former lack of proper equipment and materials which are now available for modern installation. There are two distinct principles embodied in the sulphite plant design arrangement dating back to the origin of the process:

1. Absorption by means of bubbling gas through a body of liquid.
2. Countercurrent absorption employing auxiliary means for increasing the interfacial contact surface.

Originally, batch systems using separate preparing vessels were employed. In the latter part of the last century, the use of counter-current limestone absorption towers appeared in the sulphite process arrangement.

In the period revolving around the 1910 era, the use of batch absorption and tray absorption were predominant in American industry. In 1914, the introduction of the reversible type limestone tower system received favorable attention. This system employed countercurrent absorption. Countercurrent absorption was carried further into the recovery plant to augment the existing mass absorption apparatus. Current accepted chemical engineering design advances the desirability of countercurrent absorption vessels or units because of the superior advantages obtained over the mass absorption principle. In 1914, there were approximately 106 operating sulphite mill units, 74 of these being milk of lime systems, and 32 limestone systems of the Mitcherlich type. At the present time, this ratio has been more than reversed. Since 1920, the advantage of limestone tower operation has been accepted for calcium base acid making where the lime content is a purchased item by the mill.

The economics of sulphite acid production have been

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 23-26, 1948.

[1] Member TAPPI; Vice-Pres., G. D. Jenssen Co., Inc., Watertown, N. Y.

stated by R. S. Hatch *(2)* as follows:

Based on requirement per ton of pulp, the cost of the commercial bases is given below, i.e.

MOLECULAR WEIGHT BASIS

350 lb. calcium carbonate
370 lb. sodium carbonate
119 lb. anhydrous ammonia
140 lb. magnesium oxide

At the 1946 market value, cost of chemical base per unbleached ton of pulp is shown to be:

Sodium carbonate	base	$3.70 per ton
Ammonia	base	3.57 per ton
Magnesium	base	2.80 per ton
Calcium	base	0.74 per ton

"It is obvious that no manufacturer can afford to use other bases than calcium without employing some method of recovery, which will bring his cost relatively close to the cost of calcium as a base."

Calcium base is obtained by several means for process application. Limestone is the cheapest source of raw calcium material unless calcium is available as a waste byproduct from alkaline pulping, or other chemical processes.

Milk of lime plants do not represent any economy if lime is purchased as calcium or magnesium oxide. Intraprocess or interstage cooling of acid in milk of lime absorption is a necessity to control final acid temperature; consequently, the range of system capacity is limited to the cooling equipment available. Because of the heat of reaction in milk of lime absorption, the temperature rise is a limiting factor to flexibility of control. Limestone acid towers offer by direct contrast to milk of lime systems, reduced power consumption, less maintenance, and relief from troubles caused by sulphate formation, plus a wider range of operating flexibility and control.

The sulphite process has endeavored to utilize the sensible heat available in process without giving proper attention to the critical equilibrium point of solution. At the critical equilibrium point of solution, the sensible heat should be converted into other mediums of energy to prevent deterioration of the strength of raw acid and the strength of the cooking acid which the operator is endeavoring to control.

The advent of circulating systems and indirect heating in sulphite digesters with subsequent chip packing or distribution has introduced a new process problem into the sulphite mill requiring stronger acid solutions in the raw acid phase to make up the chemical requirement for the cooking process. This requirement in raw acid preparation necessitates plant design flexibility to permit the operator a range of operating control to provide proper chemical composition and balance for variable wood density, variable chip moisture, and variable raw water temperatures.

Modern cooking practice tends more and more to reduce the cooking acid to wood ratio. This condition is also true in plant operation with magnesium and ammonia base acid as well as calcium base acid. The general accepted cooking acid to wood ratio was formerly 5 to 1 approximately reducing to 4.5 to 1 and in some instances 4 to 1. On calcium base cooking, this figure has been reduced to 3.5 to 1, according to information from plant figures. In magnesium base cooking this acid to wood ratio is expected to reach approximately 2.5 to 1.

The raw acid plant is assumed, by some operators, to be capable of producing desired cooking acid conditions. The preparation of the cooking acid is distinctly a function of the recovery plant equipment. It is well recognized that the reduced volume of acid charge per digester places a load on the raw acid plant department to support the chemical requirement and also to satisfy the proper chemical balance required in the cooking acid.

In both the raw acid plant and the recovery plant, the absorption process can be entirely arranged in complete countercurrent flow with adequate pressure storage provided for the solution obtained. To achieve counter flow absorption in process, the preferable arrangement is the counter flow tower operated at atmospheric or at pressures higher than atmospheric. Absorption efficiency is highest with the tower arrangement, both in the acid making stage and in the recovery plant phase.

Modern plants should resort to bottle-tight storage vessels to eliminate gas losses and subsequent nuisance; and of equal importance to eliminate air entrainment which is a source of trouble and represents difficulties that extend to reduced wood yield and lowered quality of pulp produced.

Temperature Effects

"There are other factors that influence acid making, but none as important as temperature *(3)*. The "curse of acid making" refers to the warm water condition of summer operation which may be relieved by proper equipment design. However, the same advantage of limestone use over milk of lime use exists in a true analysis of the process function."

The auxiliary pressure tower to produce desired chemical balance between the combined bisulphite acid and the true free SO_2 in the raw acid is a distinct innovation to the process and has the feature of serving as a connecting link in plant operation in a bottle tight system. This system is capable under average conditions up to 30°C. acid to eliminate the need of refrigeration of raw water to obtain proper strength of solution. The auxiliary pressure acid making tower, provided in addition to the first stage process of acid making, is equally applicable to any sort of chemical base in the industry; calcium, magnesium, or ammonia. Regardless of the amount of makeup chemicals, each type of base liquor will require a certain amount of sulphur as SO_2 and a makeup quantity of the base chemical for the process.

The sulphite pulp industry inherited from the sulphuric acid industry, the preparation of SO_2 by the combustion of sulphur to sulphur dioxide. The majority of the printed data on conversion of sulphur dioxide to sulphur trioxide deals with SO_2 gas strengths of less than 15% SO_2 by volume. It remained for the sulphite pulp industry to develop its technique or produce gas strengths of 17% to 19% to produce raw bisulphite acid strengths of 4 to 5% total SO_2 by weight.

In the sulphur plant, molten sulphur is produced in a separate melter unit and is held in molten storage at proper temperatures. Several arrangements for the production of SO_2 are possible. A number of plants have combustion chambers equipped with spray burning nozzles; a number of plants have auxiliary or integral boiler arrangement for partial cooling of gases. The more recent arrangement is the use of firebrick lined rotary vaporizers where sulphur is completely vaporized before entering the combustion chamber itself.

The combustion of sulphur and conversion to SO_2 should be definitely controlled according to the liquid flow rate in the acid towers and the desired absorption equilibrium point of the acid to obtain predetermined results. Tandem combustion chamber arrangement offers complete combustion in the ordinary plant. The tandem chamber arrangement can be employed using auxiliary or integral waste heat boilers. Temperature

control in the sulphur plant, apart from seasonal water temperature variation, is a necessary function in a modern acid plant.

Gas cooling to the proper absorption temperature can be accomplished by indirect cooling or by direct spray cooling. Careful provision should be made to insure that gas temperatures are low enough to maintain proper raw acid temperatures. Direct spray cooling demands a lower exit gas temperature than indirect cooling to avoid elevating the acid temperature of the resulting solution, since the absorption temperature reaction with the saturated vapors from the spray cooler in exothermic action may produce detrimental overall process conditions.

The use of counter flow towers is an accepted means of absorption or stripping of solution in the chemical process industries and is the proper exercise of current chemical engineering practice. Raw acid production can be controlled and chemically regulated in towers with chemically inert packing for use with calcium oxide slurry, calcium slurry, kraft mill slurry, magnesium oxide slurry, and ammonium base liquor. In fact, all these applications are in current practice. The raw acid auxiliary pressure tower offers the best arrangement for operating economy, and for end point control of the final raw acid characteristics and strength.

Raw acid is processed to storage and enters in the final preparation of cooking acid by passing over recovery towers operating with the available pressure obtained from the digesters. No auxiliary mechanical pressure is needed. In the low pressure recovery stage the acid should be introduced in countercurrent absorption in a low pressure recovery tower, and then stored in a vessel under pressure pending advancement to a higher pressure stage. In the final pressure stage, the acid would obtain its final fortification in a pressure absorption tower, and afterward stored under pressure pending its discharge into the cooking vessel.

In the recovery plant emphasis should be placed on the temperature factor in the pressure stage. In each pressure stage, the temperature should be capable of control so as to avoid stripping the solution of its respective sulphur dioxide charge. Consequently, when the temperature is of no further process value in the solution, the heat should be converted into other sensible forms of energy for plant processing purposes.

As recovery plant efficiency is increased, the ordinary load on the raw acid plant is decreased. It is incorrect to state that high strength cooking acid is a result of the raw acid plant since the capacity of the recovery plant including its auxiliary equipment are the controlling elements in proper cooking acid strength control.

Many plants are pointing to revised and improved production conditions. The results are best defined by a complete study of existing equipment with a view to eliminating bottlenecks and installing equipment of proper size and of proper design to realize predetermined conditions. In keeping with prevailing chemical plant practice, countercurrent absorption equipment with adequate closed storage will eliminate many of the process variables, which have penalized production and irked operators and management in the past.

Literature Cited

1. Pflieger, L., Northwestern Section American Pulp & Paper Mill Superintendent's Association—Land O' Lakes, Wisconsin—June, 1947.
2. Hatch, R. S., CPPA Summer Meeting—Port Arthur, Ontario—June, 1946.
3. Lundberg, A. H., CPPA Summer Meeting—Port Arthur, Ontario—June, 1946.

New TAPPI Members

The TAPPI Kalamazoo Valley Section will meet in Kalamazoo, Mich. at 6:30 P.M. May 6, 1948. L. J. Scheid of the Watervliet Paper Company will be in charge and the Westinghouse Electric Company will show a display of a complete power distribution system.

The Western District of the TAPPI Empire State Section will meet at the Prospect House, Niagara Falls, N. Y. on May 12th at 6:30 P.M. Richard O'Brien, Manager of Moore Forms, Inc., will talk on "The Use Requirements of Paper."

The TAPPI Empire State Section (all branches) will meet at the Hotel Woodruff, Watertown, N. Y. on June 3-5, 1948. In addition to an interesting Technical program there will be a visit to the Bagley & Sewall Company plant. The Syracuse Supply Company will exhibit its new Syco drive.

David O. Adams, formerly of the West Virginia Pulp and Paper Company, is now in the research department, Bird & Son, Inc., E. Walpole, Mass.

Erik Ungern of Tervakoski Paper Mill, Tervakoski, Finland, recently returned from his visit to the U. S. A.

David E. MacKnight, formerly of Crane & Company, is now in the research department of Industrias Cavallari, Sao Paulo, Brazil.

Bruce W. Martin, formerly of the Union Bag & Paper Corporation, is now manufacturing manager for the American Box Board Company, Grand Rapids, Mich.

Herbert E. Karberg is now asst. manager, Alliance Paper Mills Ltd., Merritton, Ont.

Paul W. Hardesty, formerly engineer for the Harriman Tenn. Division is now division manager for the Mead Corporation, Nashville, Tenn.

The mother of James A. Wise, Vice-President of the Kalamazoo Paper Company recently died, enroute from Florida.

G. W. Corddry, asst, manager of the Titanium Div., National Lead Company has succeeded I. D. Hagar, retired as official representative of the Company in the Technical Association.

Paul Schon has succeeded Erik F. Kruse as corporate representative of A/S De Forenede Paperfabrikker, Copenhagen, Denmark.

The name of the Mathieson Alkali Works, a TAPPI Member, has been changed to Mathieson Chemicals, Inc.

Nils Lundgren, chief chemist and Otto Anderzen, millmanager of Holmes Fruks och Fabriks A/b, Norrkoping, Sweden, are visiting in the United States and Canada.

IES Lighting Handbook

The Illuminating Engineering Society has recently issued its IES Lighting Handbook (850 pp. 6x9). This was prepared through the efforts of a large number of experts in the field of illumination engineering. It is the most comprehensive manual of light and lighting ever published.

The book is divided into two divisions. The first deals with the physics of light production, light and vision, standards, nomenclature and abbreviations, color, measurement of light, light sources, lighting calculation, and daylighting. The second division deals with application to interior lighting, exterior lighting, sports lighting, transportation lighting, photographic, reproduction, projection and television lighting, miniature lamps, and miscellaneous application and radiant energy. A third section is made up of manufacturers data relating to their own product.

Copies may be obtained from the Illuminating Engineering Society, 51 Madison Ave., New York 10, N. Y. at $7.50 per copy.

Application of Statistical Methods to Paper Testing Procedures*

Part I. Folding Endurance

By L. K. Reitz[1] and F. J. Sillay[1]

Abstract

A series of experiments was run (1) to compare precision of an MIT and a Schopper folding endurance machine on the same paper, (2) to compare precision of different papers on one MIT machine, and (3) to compare folding endurance levels of four MIT machines on several papers. It was found that there was no difference in the precision of the MIT and Schopper machines, but the difference in precision between papers as measured on one machine was real. The four MIT machines were found to produce folding endurance results which did not differ more than would be expected from test variability.

During the past few years, the increasing application of statistical techniques has been reflected in the improved interpretation of experimental and control data. Improved because research groups, engineers, and product control people have been able to determine with more certainty the range within which the true quality of their product falls; to determine when a process is operating within limits predicted from its inherent variability, and thus provide critical points at which a process should be investigated for "trouble"; to design experiments whereby the effects of particular variables on product yield and quality can be evaluated with a minimum amount of data; to determine the correlation or interrelationship between variables; to determine the reproducibility of test procedures and thereby differentiate between real differences among tested materials and those which might have occurred as a result of test method variability.

Introduction of statistical methods was given impetus during the war years, particularly in the mechanical industries. Here the applications were more straightforward than in the chemical industries because of the additional problems confronting the chemical engineer. Bicking *(1)* states that "The mechanical engineer is fortunate in that his sampling errors are usually small and can, for practical purposes, be taken as negligible if the operation is performed properly. Occasionally, he is troubled by dimensional measurement, but most of the time the errors in measuring such properties as length can be taken as negligible." This is in direct contrast to the problems found in a batch or continuous chemical operation where the chemical engineer must be concerned with sampling error, analytical error, and inherent variability of both raw material source and production process. The fundamental concept of variability is, however, common to all industries, and it is the general opinion of most authors of statistical texts that in the future the use of these methods will become basic in most production operations.

Shewhart control charts, tests of significance, correlation calculations, and variance analysis are among the more common statistical tools receiving widespread use. Discussion of all these techniques can be found in many statistical texts among which Shewhart *(2)*, Snedecor *(3)*, Freeman *(4)*, and Brownlee *(5)* are widely read. It has often been demonstrated that the straightforward application of the simpler methods can be extremely effective in production control and economy. This fact is responsible for the opinion of many writers that far more benefit can be derived by placing a basic knowledge of these principles in the hands of management, engineers, and control supervisors rather than introducing a few highly trained statisticians into industrial positions. Many of the recent texts, of which E. L. Grant's "Statistical Quality Control" and L. E. Simon's "An Engineers Manual of Statistical Methods" are excellent examples, were written with such a viewpoint. Intensified courses have also been offered at several schools throughout the country, again with the idea of introducing the fundamental concepts to industrial engineers who could make immediate and effective use of them.

Some of these tools would seem to be adaptable to the problems encountered in the physical testing of paper, and it is the object of this series of papers to make such application. Bicking *(6)* has demonstrated the use of Shewhart charts for control of basis weight and bursting strength. These characteristics, however, are not subject to extremely large errors of measurement. Folding endurance data, on the other hand, often display a discouraging amount of variability among results, and it is difficult to know how much is attributable to testing procedure and how much to sample.* TAPPI has partially recognized this situation in specifying that a comparatively large number of tests (ten in each direction) be run in obtaining an average result for any one sample *(7)*. However, it is the authors'

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 23-26, 1948.

[1] Paper Service Department, Eastman Kodak Co., Rochester, N. Y.

* At one time this laboratory investigated the possibility of the use of aluminum and other metal foils as a standard sample for checking folding endurance machines. Variability of results was far less than that found in testing paper. However, the method was not considered entirely satisfactory because the fold level of the foils was low (5 to 40) even at decreased tension.

TABLE I.—INDIVIDUAL MIT RESULTS ON EXPERIMENT TO CHECK PRECISION ON ONE SAMPLE

302	220	455	549	441	390	298	696
414	565	418	458	137	462	508	569
587	480	448	243	274	329	307	448
633	529	389	407	380	521	340	440
285	428	397	466	233	448	581	470
369	624	420	352	337	353	278	500
304	413	347	286	172	137	418	430
264	532	312	447	433	435	582	313
370	538	145	390	388	274	502	360
237	500	458	351	469	355	376	352
128	308	356	425	397	259	133	382
166	354	543	242	407	435	568	531
261	216	300	477	154	532	421	300
154	343	144	353	438	519	515	377
199	158	210	236	439	474	605	415
385	391	611	356	335	460	390	418
428	603	140	203	25	560	406	338
360	419	340	435	102	551	582	442
407	421	358	790	470	523	96	474
272	276	456	410	334	709	390	388
366	365	335	370	390	576	41	652
457	230	368	393	236	360	330	352
216	246	461	482	553	295	323	321
220	215	521	541	388	395	347	574
313	384	530	260	307	608	294	354

TABLE II.—INDIVIDUAL SCHOPPER RESULTS ON EXPERIMENT TO CHECK PRECISIONN ON ONE SAMPLE

305	232	336	259	265	190	259	308
257	250	409	175	341	217	217	315
352	285	367	270	209	376	290	256
338	209	226	206	309	229	184	294
282	295	384	282	377	135	201	159
257	275	193	293	293	197	182	132
246	269	249	199	124	227	218	192
315	223	330	279	337	204	243	204
370	178	332	137	275	218	154	182
110	290	287	253	458	287	233	235
193	373	314	248	349	356	181	325
258	194	328	241	328	409	218	340
265	183	332	191	327	329	177	137
266	223	253	186	136	264	454	387
196	232	375	188	113	271	210	240
238	275	353	245	181	399	228	170
241	281	311	227	323	225	370	99
189	277	287	284	146	164	212	121
211	259	411	105	343	226	238	121
218	304	319	300	240	171	192	460
250	272	285	382	154	313	241	395
171	285	374	265	265	286	166	420
264	265	345	215	153	216	235	262
258	296	232	201	135	186	176	250
203	330	288	232	212	285	266	187

opinion that, despite the tremendous amount of investigational work which has been reported on folding endurance tests, more reliance is often placed on an average fold result than statistical analysis would indicate to be justified. Certainly Simmond's and Doughty's *(8)* work raises serious question as to the reliability of either an individual fold test or an average of a small number of tests.

Despite this fact, the folding endurance characteristic of certain papers is considered to be an important one. Not only does it determine an initial property of a paper but a change in this property after a specified heat treatment is the basic test of permanence *(9)*. It is in the latter adaptation of the test that variability becomes extremely critical. It is reasonable to expect that occasionally the error encountered in measuring the initial and after-treatment folding endurance would become additive in the calculation of the permanence factor. In such a case, the error in the final ratio would exceed that which was found in either of the component folding endurance averages.

Recently, this laboratory, which runs physical tests on all routine production material and many special experimental products, was faced with the problem of increasing its folding endurance testing capacity. The question was immediately raised as to whether the new machines should be of the Schopper or MIT type, and five points were considered in reaching a decision. They were (1) availability of equipment and replacement parts, (2) ease of maintenance, (3) tension adjustment, (4) operational speed, and (5) precision.

For the first three, the MIT machine would seem to offer decided advantages. Entire units and replacement parts were readily obtainable. The German-make Schopper machines of the type which the laboratory was using posed a serious problem both in purchase of new units and parts. It had also been this laboratory's experience that the MIT machine required less maintenance than the Schopper, principally because of fewer critical points at which wear was likely to occur. The method of tension adjustment is also superior on the MIT. Not only is the tension set for each sample, but it provides for the possibility of running certain papers at tensions either above or below the standard 1 kilogram.*

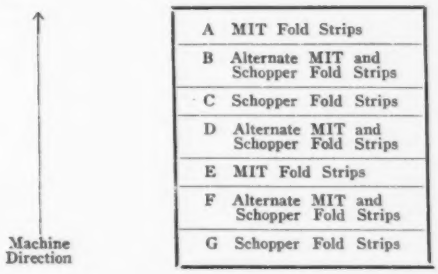
The fourth point under consideration did not distinctly favor either type. Time required for sample change on the Schopper is less, but the MIT makes more folds per minute. For low folding endurance papers, therefore, the Schopper machine is slightly faster, while the MIT has the advantage on high folding endurance stocks.

Investigation of the fifth point, precision, was the object of the first experimental work which will be discussed.

Experimental

I. Precision of Schopper vs. MIT.

The first experiment was designed to provide an estimate of the reproducibility of one MIT machine and one Schopper machine on a single sample. The paper used was a wood pulp stock of approximately 4.5 thousandths thickness and 20 pounds basis weight. Fold strips were cut from a single handroll according to the diagram below:


Machine Direction
A MIT Fold Strips
B Alternate MIT and Schopper Fold Strips
C Schopper Fold Strips
D Alternate MIT and Schopper Fold Strips
E MIT Fold Strips
F Alternate MIT and Schopper Fold Strips
G Schopper Fold Strips

A total of sixty machine direction fold strips were cut from each of the lettered strips until 200 were obtained for each of the two machines. Standard TAPPI procedure was followed except for the sampling scheme and number of fold strips which were run.

The MIT and Schopper results are listed in Tables I and II, respectively. Figures 1 and 2 demonstrate the short method of calculation of average and standard deviation by rearranging the data into grouped frequency diagrams *(11)*. Since the folding endurance level was not the same for the two machines, the coefficients of variation rather than standard deviation were used to compare precision. This coefficient is defined as the standard deviation expressed as a percentage of the average result and does, therefore, provide a method of comparing precision at any level.

It will be noted from the plots of the data in Figs. 3 and 4 that there are no apparent trends in folding level resulting from position within the samples. These diagrams serve to illustrate not only approximate agreement with the normal or Gaussian distribution but also the meaning of precision when expressed in multiples of the standard deviation. Using the MIT data, for example, if one standard deviation were taken as the

TABLE III.—COEFFICIENTS OF VARIATION CALCULATED FROM 100 RESULTS ON EACH SAMPLE

Sample No.	Paper A		Paper B		Paper C	
	Along	Across	Along	Across	Along	Across
1	26.7%	29.7%	21.7%	19.4%	44.7%	37.0%
2	24.3	25.8	24.3	26.4	37.7	34.5
3	27.7	36.0	17.0	18.0	33.6	32.7
4	26.7	25.3				
5	24.7	28.3	Ave. 21.0	21.3	38.7	34.7
6	18.7	25.7				
7	24.7	25.7				
8	27.7	26.4				
9	27.3	25.7				
10	36.4	26.7				
11	22.7	26.0				
12	24.3	24.7				
13	24.3	26.4				
14	21.7	21.7				
15	31.3	30.4				
Ave.	25.9	27.0				

* Several experiments were run at an earlier date to determine the effect of tension on folding endurance for the type paper with which the laboratory is concerned. The results were in general agreement with those reported by other investigators (as early as 1905 by Naoumof *(10)*. A plot of tension vs. folding endurance on log-log paper resulted in a straight line, the slope of which was apparently dependent on the type of paper tested.

TABLE IV.—DATA FROM EXPERIMENT COMPARING FOUR MIT MACHINES
(Each Result Is An Average of 25 Folds)

Sample		A		B		C		D		E		F		G		H	
Paper Direction		L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C
0.02 Inch Jaw Machine No.	1	71	21	633	296	57	59	163	50	30	16	190	82	1810	1410	2890	1380
	2	69	25	467	368	84	66	133	44	32	18	203	98	1680	1480	2600	1360
	3	62	22	473	411	88	56	144	52	29	17	218	111	2020	1270	2680	1520
	4	60	26	644	311	82	63	224	53	32	18	236	73	1670	1240	2620	1340
0.01 Inch Jaw Machine No.	1	61	21	656	395	82	59	218	41	28	17	218	81	2010	1440	2460	1130
	2	62	26	715	460	78	65	139	47	31	18	214	118	1760	1460	2640	1410
	3	45	26	672	482	76	57	166	51	33	18	246	100	1780	1510	2290	1470
	4	85	33	726	479	107	77	292	65	37	21	252	117	2310	1600	2820	1780
Recheck on Machine 4 (New Jaw)																	
0.01	4	58	24	701	454	86	65	258	54	32	19	231	91	1510	1430	2470	1500

unit of precision measurement, we would estimate that approximately 65% of a large number of fold tests would fall within ∓ 130 folds of the average value of 388.*

Returning to the comparison between the two machines, it was found that the MIT coefficient of variation was 33.6% and the Schopper 29.3%. Additional experiments on other type papers gave results of 26.9% and 29.8% for the MIT as compared with 32.6% and 27.3% for the Schopper. On the basis of these results, there was no evidence that either type machine could be expected to produce more precise results than the other.

Since the other points under consideration which were discussed previously seemed definitely to favor the MIT, the laboratory decided to purchase three new machines of this type to supplement its former equipment.

II. Precision of MIT on Different Papers

Since the laboratory would be using the MIT machines on several grades of paper, it was considered advisable to determine whether the expected precision of results would change with the material being tested. Three papers which varied in both original furnish and processing were selected for study.

On the first grade, fifteen samples, each of which represented a different making, were run in a manner similar to the procedure used in the previous experiment. One exception to this method was made, however. Since there was a possibility of a difference between the precision of the machine and across machine directions of the paper, 100 fold strips each were run rather than 200 in the machine direction only. This made, in all, 3000 fold values. Each group of 100 results was arranged in the form of frequency diagrams, and averages, standard deviations, and coefficients of variation were calculated as in Part I.

The coefficients were found to be reasonably consistent and independent of the making for the first grade. Simmonds and Doughty *(8)* had also reached the same conclusion in their investigation. It was not considered necessary, therefore, to run as many different makings on the next two papers, and only three were checked on each of the two grades. Running 100 folds in each direction as on the first grade of paper, this made a total of 1200 folds. The coefficients of variation, calculated from the total of 4200 folding endurance tests. are presented in Table III.

Table III indicates that a difference in the coefficient of variation may be expected with change in paper grade. This is particularly marked for paper C, which was pigment loaded. However, the coefficients of variation are fairly constant from batch to batch within any one grade and appear to be independent of along or across machine direction. It is felt, therefore, on the basis of these results, that use of the MIT tester is justified for control work and that prediction of its reproducibility can be made for any one grade.

It has been shown that if the average and the standard deviation of a distribution is known, then 997 times out of 1,000 a single observation should fall within plus or minus three standard deviations ($\pm 3\sigma$) of the average. If the number of determinations *(n)* be increased, then this spread is reduced in a manner proportional to the square root of the number of samples (i.e., Spread$=\pm 3\sigma/\sqrt{n}$). This statistical principle has been used to construct Fig. 5, which is a plot of expected precision versus the number of fold tests run on papers A, B, and C. Similar plots could be constructed for the other paper grades. Clearly, the greater

FIG. 1

CALCULATION OF STANDARD DEVIATION FROM FREQUENCY DIAGRAM—MIT DATA

Cell Boundaries	f	d	fd	fd^2
0 - 99	3	—3	—9	27
100 - 199	14	—2	—28	56
200 - 299	29	—1	—29	29
300 - 399	65	..	..	..
400 - 499	49	1	49	49
500 - 599	30	2	60	120
600 - 699	8	3	24	72
700 - 799	2	4	8	32
	200		+75	385

$$\text{Average folding endurance} = X = X_0 + C\frac{Sfd}{n}$$
$$= 350 + 100 \cdot 75/200$$
$$= 388$$

$$\text{Standard deviation} = \sigma = C\sqrt{\frac{Sfd^2}{n} - \frac{Sfd^2}{n} - 1/12}$$
$$= \sqrt{100385/200 - (75/200)^2 - 1/12}$$
$$= 130$$

$$\text{Coefficient of Variation} = \frac{\sigma}{X} \cdot 100 = 130/388 \cdot 100$$
$$= 33.6\%$$

where f = number of results included within any cell
d = number of cells from the assumed mean cell
X_0 = midpoint of assumed mean cell
C = cell size (number of folding endurance units included in one cell)

* Extreme variability of results on both machines is demonstrated in the table below which lists maximum and minimum results obtained in calculating averages of consecutive sub-groups of different size using the data of Tables I and II.

No. of Samples in Average	MIT	Schopper
50	370 to 420	241 to 276
20	340 to 495	230 to 300
10	247 to 535	207 to 325
5	233 to 553	184 to 345
3	194 to 571	170 to 365

FIG. 2

CALCULATION OF STANDARD DEVIATION FROM FREQUENCY DIAGRAM—SCHOPPER DATA

Cell Boundaries	f	d	fd	fd^2
0 - 49	0	−5	−0	0
50 - 99	1	−4	−4	16
100 - 149	12	−3	−36	108
150 - 199	35	−2	−70	140
200 - 249	51	−1	−51	51
250 - 299	49	..	..	..
300 - 349	29	1	29	29
350 - 399	16	2	32	64
400 - 449	4	3	12	36
450 - 499	3	4	12	48
	200		−76	492

$$\text{Average folding endurance} = X = X_0 + C\frac{Sfd}{n} = 275 + 50 \cdot \frac{(-76)}{200} = 256$$

$$\text{Standard deviation} = \sigma = C\left(\frac{Sfd^2}{n} - \frac{Sfd^2}{n} - 1/12\right) = 50\left(\frac{492}{200} - \frac{-76^2}{200} - 1/12\right) = 75$$

$$\text{Coefficient of Variation} = \frac{\sigma}{X} \cdot 100 = 75/256 \cdot 100 = 29.3\%$$

where f = number of results included within any cell
d = number of cells from the assumed mean cell
X_0 = midpoint of assumed mean cell
C = cell size (number of folding endurance units included in one cell)

the number of tests run, the better should be the precision, although since this increases with the square root of the number, the largest gains will be made as one increases from one to about thirty fold determinations.

Consideration of Fig. 5 leads to some interesting conclusions. Using paper A for illustration and assuming a folding endurance value of 1000, an average of ten results should fall within ±25% of 1000 or between 750 and 1250. Similar limits on paper C would be ±33% of 1000 or between 670 and 1330. It can readily be seen that in order to obtain an average result on a high fold paper precise within a few folds, an unreasonable number of fold tests would have to be run. With paper A's coefficient of variation and a folding endurance of 1000, over 6000 tests would be required to produce an average reproducible within ten folds, using the 3σ assurance level. Hence, it becomes foolish to attempt to distinguish papers by differences of a few fold units unless an absurd number of fold endurance tests are made.

III. Comparison of Folding Endurance Levels Obtained on Four MIT Machines

When the new MIT folding endurance machines were added to the equipment of the laboratory, it was intended that they be used principally for routine daily production testing. Under these conditions, it is often desirable to compare results which would be obtained on different machines. In order to justify any such comparison, it was necessary to know whether there was any consistent difference in the folding endurance levels of the several machines. An experiment was set up to answer this question and also to determine whether the interchange of 0.01 inch and 0.02 inch jaws would alter fold results.

Eight different papers (less than 0.01 inch in thickness) were run in both along and across machine directions on four fold machines, using both 0.01 inch and 0.02 inch jaws. The fold strips were cut from large single sheets of each sample and were assigned at random to the several machines. Based on Fig. 5, a reasonable number of strips to run for each average was thought to be 25. Thickness and basis weight of the eight papers were as follows:

Paper	Thickness, thousandths	Basis Weight, lb./1000 sq. ft.
A	5.5	27
B	5.0	25
C	4.0	19
D	3.0	12
E	7.0	27
F	4.5	21
G	6.5	22
H	6.0	24

The four machines were numbered 1 through 4, the first three being the newly purchased machines and the fourth the old instrument used in the previous experiments.

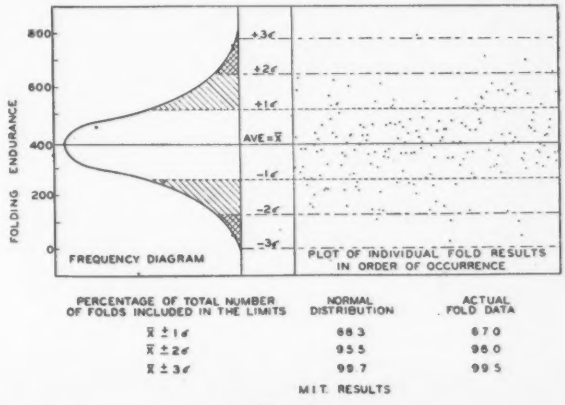
The results in the form of averages of the 25 strips are presented in Table IV. (The additional series at the bottom of the table will be explained later.) This data was then submitted to a variance analysis, and the summary is shown in Table V.

Analysis of variance attempts to isolate the factors responsible for changes in the characteristic under measurement without making it necessary to hold constant all factors except the one under investigation. A full explanation of this technique cannot be given here, and it is suggested that Brownlee *(5)* be consulted. In the second column from the right of Table V, the factors responsible for change in folding endurance have been isolated, the so-called residual being the variability which cannot be accounted for in any known way. It is used, therefore, as a measure of the significance of the other terms, and when divided into them, leads to the last column which suggests the relative magnitude of the different factors. Tables of significance have been worked out and allow one to judge whether a variable can be regarded as important and requiring control or whether it is of a minor nature. In Table V, it will be noted that, as might be expected, the "Sample" source of variance dwarfs all others.* The "Jaws" source of variance is significant as is its interaction "Jaws x Machine." This has an operational meaning. The combination indicates that there was a difference between folding levels obtained on 0.02 inch and 0.01 inch jaws but that the effect was not consistent with all the machines. From the original data, it was suspected that

TABLE V.—VARIANCE ANALYSIS ON FOUR MACHINES

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	Variance Ratio
Jaws	38,956	1	38,956	4.06*
Machines	47,587	3	15,862	1.65
Samples	78,704,372	15	5,246,958	547.24***
Jaw × Machine	110,888	3	36,963	3.86*
Jaw × Sample	177,360	15	11,824	1.23
Machine × Sample	254,920	45	5,665	0.59
Residual	431,450	45	9,588	...
Total	79,765,533	127		

* Significant.
*** Highly significant.



PERCENTAGE OF TOTAL NUMBER OF FOLDS INCLUDED IN THE LIMITS	NORMAL DISTRIBUTION	ACTUAL FOLD DATA
$\bar{X} \pm 1\sigma$	68.3	67.0
$\bar{X} \pm 2\sigma$	95.5	96.0
$\bar{X} \pm 3\sigma$	99.7	99.5

MIT RESULTS

FIG. 3

TABLE VI.—VARIANCE ANALYSIS ON THREE MACHINES
(Data from Machine 4 Eliminated)

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	Variance Ratio
Jaws	160	1	160	0.03
Machines	792	2	396	0.07
Samples	57,476,862	15	3,831,791	688.43***
Jaw × Machine	10,688	2	5,344	0.96
Jaw × Sample	172,718	15	11,515	2.07
Machine × Sample	168,946	30	5,632	1.01
Residual	166,970	30	5,566	...
Total	57,997,136	95		

*** Highly significant.

the 0.01 inch jaw on machine 4 might be producing high results. This suspicion was confirmed when a second analysis was run after eliminating entirely the data on this machine. This latter summary, in which only the Sample term is significant, is given in Table VI, and it is concluded, therefore, that this particular jaw is defective.**

* It is realized that this procedure neglects the fact that variances of the several samples are not equal. However, when Brownlee's (5, p. 107) suggested method of substituting logarithms for the simple variable is used, the same basic conclusions are reached.

** Samples were checked on machine 3 using this jaw. The results were again consistently high, and it was concluded that some critical characteristic of this jaw was different from those on the other testers.

On the basis of these data, a new 0.01 inch jaw was purchased for machine 4, and that portion of the original experiment was repeated. It is this series which appears at the bottom of Table IV. Using these results, the variance analysis on all four mchines was also repeated. The summary is given in Table VII. The Jaw and Jaw x Machine terms were no longer significant, indicating that replacing the old 0.01 inch jaw on Machine 4 had corrected the difficulty experienced in the first experiment.*

It can be concluded from this final analysis that any difference among properly adjusted machines is not beyond that which might be expected from inherent variability of the test method.

Summary

In the first of three series of experiments, it was shown that a large number of folding endurance results on a single sample formed a frequency distribution which approximated the normal or Gaussian distribution. The short method of calculating frequency diagrams was illustrated. Coefficients of variation for MIT and Schopper results on the same paper were compared, and it was concluded that there was very little difference in precision between the two types of machines.

* The Jaw × Sample interaction was slightly above the 5% level of significance, but no operational meaning could be placed on the term. The effect was not always consistent within the along and across directions of the papers and could not be correlated with either thickness or basis weight of the samples.

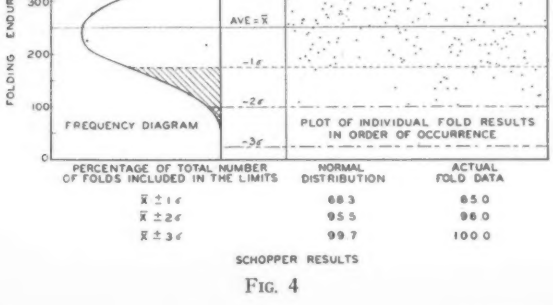


FIG. 4

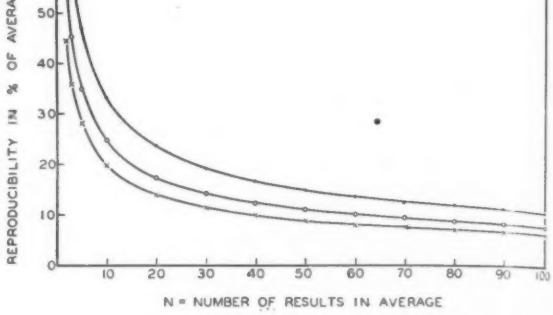

REPRODUCIBILITY IN % OF AVERAGE FOLD LEVEL
70
60
50
40
30
20
10
0
10 20 30 40 50 60 70 80 90 100
N = NUMBER OF RESULTS IN AVERAGE
• PAPER A - COEFFICIENT OF VARIATION = 26 %
× PAPER B - COEFFICIENT OF VARIATION = 21 %
• PAPER C - COEFFICIENT OF VARIATION = 35 %

FIG. 5

The second series of experiments consisted of checking the reproducibility of one MIT machine on three different papers. Several samples, each of which represented a different making, were run in both machine and across machine directions on each paper. There was found to be a real difference in precision among the three grades but not betwen the paper directions on the same grade. Reproducibility as measured at the three standard deviations assurance level was found to be very poor, particularly when only a small number of tests were made on a sample.

The final series of experiments was run to compare folding endurance levels on four MIT machines using both 0.01 inch and 0.02 inch jaws. Using the variance analysis technique, it was found that the 0.01 inch jaw was producing high results. This jaw was replaced and part of the experiment repeated. The new results were now down to the level of those on other machines, and it was concluded that there was no more variability among machines or between jaws than would be expected as a result of test method variability.

Literature Cited

1. Bicking, C. A. Industrial Quality Control, Vol. III, No. 4, Jan., 1947.
2. Shewhart, W. A. "Economic Control of Quality of Manufactured Product," Van Nostrand, 1931.
3. Snedecor, G. W. "Statistical Methods," 4th Ed., The Iowa State College Press, 1946.
4. Freeman, H. A. "Industrial Statistics," John Wiley and Sons, 1942.
5. Brownlee, K. A. "Industrial Experimentation," London: His Majesty's Stationery Office, 1946.
6. Bicking, C. A. *Paper Trade J.* 124, No. 17: 63-67 (April 24, 1947).
7. TAPPI Standard T 423 m-41.
8. Simmonds, F. A., and Doughty, R. H. *Paper Trade J.* 97, No. 25: 32-36 (December 21, 1933).
9. TAPPI Tentative Standard T-453m-41.
10. Naoumof, R. *J. Soc. Chem. Ind.* 24: 1028.
11. Grant, E. L. "Statistical Quality Control," Chapter IH, First Ed. McGraw-Hill, 1946.

TABLE VII.—VARIANCE ANALYSIS ON FOUR MACHINES USING RESULTS OBTAINED WITH NEW 0.01 INCH JAW ON MACHINE 4

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	Variance Ratio
Jaws	1,346	1	1,346	0.28
Machines	4,637	3	1,546	0.33
Samples	74,666,156	15	4,977,744	1051.05***
Jaw × Machine	12,148	3	4,049	0.85
Jaw × Sample	191,459	15	12,764	2.70*
Machine × Sample	299,229	45	6,650	1.40
Residual	213,099	45	4,736	...
Total	75,388,074	127		

* Significant.
*** Highly significant.

United States Patents on Papermaking

First Quarter, 1948

Compiled by Clarence J. West, Chairman, Committee on Bibliography, TAPPI

The following list of patents has been compiled from the current numbers of the Official Gazette of the United States Patent Office. Because, as a rule, only one claim is published in the Gazette, it is not claimed that the list is complete; also, it is possible that the list may contain some patents that do not apply specifically to pulp and paper manufacture.

Copies of any of the following patents can be obtained from the United States Patent Office, Washington 25, D. C., by sending twenty-five cents for each patent desired.

January 6, 1948

2,433,867. Paper bag. William A. Ringler, assignor to Wolf Brothers, Philadelphia, Pa. Filed Jan. 28, 1944. 1 claim. (Cl. 229-68): Folds are formed in the open end portion of a paper bag to provide a strong carrying handle.

2,433,926. Vending container. Le Roy S. Sayre, Suttgart, Ark. Filed May 28, 1945. 6 claims. (Cl. 229-1.5). A container for ice cream.

2,433,965. Process and apparatus for making laminated board. Charles A. Upson, assignor to The Upson Company, Lockport, N. Y. Filed Aug. 23, 1940. 15 claims. (Cl. 154-46). A method of manufacturing laminated board, some or all of the components being treated with resin. The resin is Vinsol (a residue of wood resin derived from the solvent separation process).

2,433,994. Collapsible preformed package jacket. Bill Y. James, assignor of one half to Caroline Y. James, Miami, Okla. Filed July 2, 1945. 4 claims. (Cl. 229-16). The jacket is made of sheet material such as conventional wrapping paper or fancy wrappings.

2,434,014. Container. Leon J. Rosenberg, assignor to Gaylord Container Corporation, St. Louis, Mo. Filed June 11, 1945. 9 claims. (Cl. 229-47). The carton is provided with a cover-fastening means.

2,434,106. Impregnation of cellulose material. William E. Flood and Edward Kosinszki, assignors to Catlin Corporation of America. Filed Jan. 13, 1945. 5 claims. (Cl. 154-138). Rag paper containing 16% zinc sulphide is impregnated with styrene monomer in xylene and dried at 275° C. The polymer in the paper does not migrate to an objectionable degree to the surface of the sheet. The sheets may be used to form a laminate.

January 13, 1948

2,434,243. Bituminous emulsion. Sixten M. Hjelte, Stockholm, Sweden. Filed Aug. 30, 1944. 23 claims. (Cl. 106-123). Tall-oil pitch can be emulsified by use of 50 parts of lime sludge from the sulfate process and 1-5 parts of alkali caseinate in 100-170 parts of water; bitumen can be similarly emulsified. The products are useful as adhesives for paper.

2,434,377. Container. Edgar Watson, assignor to The Nelson Company, Baltimore, Md. Filed Nov. 14, 1945. 5 claims. (Cl. 229-5.5). A container for nails, bolts, and the like.

2,434,450. Accelerated light fastness testing apparatus. Edward A. Williford, assignor to National Carbon Company, Inc., New York, N. Y. Filed Oct. 1, 1941. 6 claims. (Cl. 73-150). A sample holder for testing the light-fastness of paper or other material.

2,434,46. Composite board. Henri M. Marc, assignor to The Philip Carey Manufacturing Company, Cincinnati, Ohio. Filed May 23, 1944. 8 claims. (Cl. 154-45.9). The cementing material consists of 75 grams 42° Bé. sodium silicate, 25 grams 28° Bé. potassium silicate, 43 grams Portland cement, 6 grams clay, 8.5 grams sodium phosphate, and 3 grams sodium fluoride. When dried the composite board contains about 18% of the bonding material. The combination of the two silicates has certain advantages over the use of either alone.

2,434,626. Process for making vanillin. Jörgen R. Salvesen, David L. Brink, Donald G. Diddams, and Peter Owzarski, assignors to Salvo Chemical Corporation, Rothschild, Wis. Filed Jan. 22, 1945. 8 claims. (Cl. 260-600). The yield of vanillin obtained by heating lignosulfonates with sodium hydroxide is greatly increased by carrying out the recation in the presence of gaseous oxygen or air. The apparatus and method are described.

January 20, 1948

2,434,642. Cream separator. Clarence E. Deardorff, assignor to C. E. Deardorff, Inc., Sacramento, Calif. Filed July 17, 1944. 6 claims. (Cl. 229-15). A method of inserting a cream separator in a paper milk bottle.

2,434,736. Apparatus for surfacing sheet material. Eldon O. Dryer, assignor to Certain-Teed Products Corporation, Chicago, Ill. Filed June 22, 1944. 11 claims. (Cl. 91-43). This patent relates to an apparatus for surfacing composition roofing materials with granules of different colors.

2,434,756. Hermetically sealed container and method of making the same. Lewis C. Brooks, Madison, Wis., assignor of one third to Ira M. Jones, Mequon, Wis. Filed Oct. 23, 1942. 3 claims. (Cl. 229-14). A method of assembling the parts of a container and the lining sheets so that all surfaces exposed to the contents and the junctures between the body and end closures are wholly covered with the impervious lining.

2,434,773. Cap for containers. Noel S. Sodders, Cleveland, Ohio. Filed April 12, 1945. 1 claim. (Cl. 215-79).

2,434,795. Method and machine for laminating. Joseph S. Glasing and Harold D. Marcotte, assignors to Westfield River Paper Company, Inc., Russell, Mass. Filed July 1, 1944. 8 claims. (Cl. 154-37). A machine for laminating glassine and the like consists of a bath for maintaining adhesives in beated liquid form, a pair of pressure rolls, means for heating the outside sheets to be laminated, etc.

2,434,892. Bag and composite material. Frederick A. Ulm, assignor to Arkell Safety Bag Company, New York, N. Y. Filed Jan. 7, 1944. 2 claims. (Cl. 154-46). A method of making a multi-ply bag; at least the outer sheet is made of a plurality of plies secured by means of a waterproof adhesive, the two sheets being secured together substantially by the nesting of their crinkles and corrugations.

January 27, 1948

2,434,974. Floor and wall covering. Herbert R. Woerner, assignor to Armstrong Cork Company, Lansaster County, Pa. Filed March 22, 1944. 16 claims. (Cl. 154-49). The fibrous foundation is impregnated with a mixture of 7 parts of tall oil, 13 parts stearine pitch, 1 part castor oil, and 79 parts of solvent, The tall oil is said to impart removability characteristics to the floor covering.

2,435,135. Collapsible shipping and display carton. Lester W. Franck, assignor to Independent Paper Box Co., Los Angeles, Calif. Filed July 4, 1945. 3 claims. (Cl. 229-16). The carton has end border braces and a frame-like construction.

2,435,155. Paper bottle. Frank D. Palmer, assignor to F. D. Palmer, Inc., Chicago, Ill. Filed June 5, 1944. 6 claims. (Cl. 229-17). A milk bottle with improved end closure and dispensing opening arrangement.

February 3, 1948

2,435,224. Decalcomania applying machine. Jesse D. Klopfenstein and Harry C. Rathke, assignors to The Meyercord Company, Chicago, Ill. Filed June 18, 1945. 27 claims. (Cl. 41-1). A machine for applying decalcomanias to a moving article, such as an electric cable.

2,435,283. Carton. Stephen Lighter, Milwaukee, Wis. Filed Nov. 18, 1944. 6 claims. (Cl. 229-36). A rigid and durable corner assemblage and lock for corners of a carton formed of single blanks.

2,435,308. Machine for making paper cups. Leo M. Harvye, La Canada, Calif. Filed Dec. 17, 1942. 15 claims. (Cl. 93-60). A machine for the manufacture of paper cups from a continuous strip of paper.

2,435,309. Mechanism for blanking material for cups or the like. Leo M. Harvey, La Canada, Calif. Filed March 28, 1944. 14 claims. (Cl. 164-22). A machine is described for cutting paper for the manufacture of paper cups. ..

2,435,355. Package construction. Edgar W. Ingram, Sr., assignor to White Castle System, Inc., Columbus, Ohio. Filed Aug. 18, 1944. 2 claims. (Cl. 229-9). The package consists of two or more duplicative box sections.

2,435,376. Paper joining machine. Kenneth H. Wilcoxon, Cabin John, Md. Filed Sept. 18, 1944. 3 claims. (Cl. 154-42). A method is described for joining two rolls of paper on a printing press.

2,435,397. Container closing method and apparatus. Joseph C. Lang, assignor to Bocjl Corporation, Pittsburgh, Pa. Filed March 3, 1944. 13 claims. (Cl. 93-42). The method of closing a container with a staple or other fastener.

2,435,398. Method and apparatus for closing cartons. Joseph C. Lang, assignor to Bocjl Corporation, Pittsburgh, Pa. Filed June 3, 1944. 21 claims. (Cl. 93-42). The staple or other fastener encircles the corner of the box as well as being engaged in the corner.

2,435,441. Process for demetallizing metallized papers. Richard A. Grouse, assignor to A. H. Hunt Limited, London, England. Filed Oct. 20, 1943. 4 claims. (Cl. 117-102). Paper suitable for the manufacture of electric condensers is first completely metallized and then a portion of the metal is burned off by an electrified condenser.

2,435,560. Bag making machine and method. Arthur W. Richens, assignor to E. S. & A. Robinson (Canada) Limited, Leaside, Ontario, Canada. Filed Jan. 29, 1944. 13 claims. (Cl. 93-18). A machine for making bags from a strip of heat-sealable material.

February 10, 1948

2,435,566. Peroxide bleaching of ground wood. Daniel O Adams and George B. Hughey, assignors to West Virginia Pulp and Paper Company, New York, N. Y. Filed Oct. 16, 1944. 3 claims. (Cl. 8-104). Mechanical pulp is extracted with dilute aqueous caustic alkali at a temperature below the boiling point to remove the tannin and color bodies ,after which the extracted pulp is bleached with an alkaline solution containing an alkali metal peroxide.

2,435,594. Hydraulic cement composition. Donald R. MacPherson, assignor to The Master Builders Company, Cleveland, Ohio. Filed Oct. 20, 1945. 8 claims. (Cl. 106-90). A dry cement composition consists of a hydraulic cement and 0.01 to 0.6% (based on the weight of the cement) of residuum solids of fermented sulphite liquor, the solids being substantially devoid of fermentable sugars.

2,435,600. Treatment of satin white. Harold R. Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed March 23, 1944. 11 claims. (Cl. 106-306). Satin white with a relatively low adhesive requirement and a decreased oil absorption is prepared by subjecting a water slurry to the action o fa hammer mill or a so-called Rafton mill.

2,435,646. Process and apparatus for the manufacture of asbestos-cement products. John A. Cann, assignor to Turner & Newall Limited. Scotland, Rochdale, England. Filed May 23, 1941. 7 claims. (Cl. 92-66): An apparatus is described for handling a mixture of asbestos and cement of the consistency of thick cream.

2,435,701. Film-forming compositions for oil-proof containers. Vance V. Vallandigham, assignor to Kelco Company, San Diego, Calif. Filed Dec. 27, 1943. 8 claims. (Cl. 106-162). A composition suitable for cementing plies of paper used for the manufacture of oilproof containers consists of 4 parts sodium alignate, 88 parts glucose, 8 parts of sorbitol, and 50 parts water. Other formulas are given.

2,435,739. Mechanism for applying adhesive to blanks in jacket forming machines. Jacob Cutler, assignor to Maryland Baking Company, Inc., Baltimore, Md. Filed Nov. 6, 1944. 7 claims. (Cl. 91-53). This is a division of U. S. patent 2,420,-417 (May 13, 1947) and provides an apparatus for applying spots or lines of adhesives to the edges of packet blanks for covering the stems of ice cream cones.

2,435,743. Waterproof bag. William J. Geimer, assignor to Bemis Bro. Bag Company, Minneapolis, Minn. Filed July 26, 1943. 3 claims. (Cl. 229-53). A method of making a multiwall bag.

2,435,878. Method and apparatus for sealing cartons by suction. Robert M. Dunning, assignor to Waldorf Paper Products Company, St. Paul, Minn. Filed Jan. 4, 1945. 17 claims. (Cl. 93-6). One or more of the flaps overlying the innermost flap or flaps of the carton has one or a series of apertures, which assist in the sealing of the carton.

2,435,901. Starch dispersion and a method of making it. Allen F. Peters, Philadelphia, Pa. Filed Aug. 25, 1945. 13 claims. (Cl. 106-211). A suspension of starch in boiling water is treated

with the reaction product of stearic acid and triethanolamine.

2,435,906. Pastry cup. Arthur Shapiro, assignor to Maryland Baking Company, Inc., Baltimore, Md. Filed Sept. 9, 1946. 3 claims. (Cl. 99-89). A pastry cup has crossed wings integral with the bottom and side walls of the cup which serve to prevent buckling and cracking of the bottom.

2,435,909. Adhesive composition comprising an aqueous dispersion of polyvinyl acetate and pinewood extract. Norman G. Tompkins, assignor to Dewey and Almy Chemical Company, North Cambridge, Mass. Filed May 19, 1947. 5 claims. (Cl. 260-27). An adhesive for a highly sized board consists of a dispersion of 25 parts of polyvinyl acetate in 25 parts of water and 22 parts of the gasoline-insoluble resin obtained as a distillation residue of wood rosin.

2,435,917. Fibre reinforced collapsible container. Philip Zalkind, New York, N. Y. Filed March 24, 1944. 3 claims. (Cl. 229-34). A container of the casing and drawer type.

February 17, 1948

2,435,959. Temperature control means for calender rolls. Le Roy Eaby, assignor to Armstrong Cork Company, Lancaster, Pa. Filed Nov. 11, 1944. 8 claims. (Cl. 257-95).

2,435,964. Pulpwood saw frame. William H. Graff, assignor to Henry Disston & Sons, Philadelphia, Pa. Filed April 14, 1943. 7claims. (Cl. 145-33).

2,436,053. Cordwood pulp tongs. Thomas J. Mundahl, North Branch, Ontario, Canada. Filed May 1, 1945. 1 claim. (Cl. 294-118).

2,436,060. Paper garment and method of making same. Sylvia Trokie and Hazel McKechnie, New York, N. Y. Filed Nov. 2, 1946. 2 claims. (Cl. 2-243).

2,436,061. Liquidproof lined carton and blank for forming the same. Harry F. Waters, New York, N. Y. Filed Dec. 11, 1942. 4 claims. (Cl. 229-14). This is a continuation of U. S. patent 2,342,439 (Feb. 22, 1944). The blank is made of chipboard and the like and the liner is coated with rubber hydrochloride, resins, protein, and similar materials.

2,436,134. Production of chlorine dioxide. Royden N. Auston assignor to The Mathieson Alkali Works, Inc., New York, N. Y. Filed March 12, 1945. 5 claims. (Cl. 23-152). A chloride is reacted with an organic acid anhydride.

2,436,140. Fibreboard cream separating milk container. Clarence E. Deardorff, assignor to C. E. Deardorff, Inc., Sacramento, Calif. Filed July 17, 1944. 6 claims. (Cl. 229-15). This is an improvement on U. S. patent 2,399,665 May 7, 1946) and provides for a cream separator insertable into a milk carton.

2,436,216. Flameproofing composition. Earl W. Leatherman, Akron, Ohio. Filed Dec. 28, 1942. 3 claims. (Cl. 106-18). The fireproofing composition consists of 12-15 parts of chlorinated paraffin wax, 10-15 parts zinc oxide, 1-3 parts aluminum stearate, 1-3 parts oleic acid, 11-15 parts opaque pigment, and a solvent.

2,436,239. Method of preparing casein adhesives. Samuel M. Weisberg and Edwin G. Stimpson, assignors to National Dairy Research Laboratories, Inc., New York, N. Y. Filed Oct. 1, 1941. 6 claims. (Cl. 106-146). An adhesive for gluing linoleum to walls is formed by heating casein with borax and then treating with trypsin.

2,436,299. Storage battery plate paste expander. Alva L. Hindall, assignor to General Motors Corporation, Detroit, Mich. Filed July 31, 1947. 6 claims. (Cl. 126-26). The paste contains from 0.2 to 2% of a mixture of 20 parts red oak sawdust, 10 parts carbon black, 8 parts sodium hydroxide, 21 parts barium hydroxide, and 41 parts sulphite waste liquor.

2,436,300. Collapsible cardboard counter basket. John V. Horr, assignor to Einson-Freeman Co., Inc., Long Island City, N. Y. Filed Feb. 7, 1947. 10 claims. (Cl. 229-41).

2,436,338. Waste machine. Chadwick P. Smith and James R. Pangle, Charlotte, N. C. Filed June 6, 1947. 6 claims. (Cl. 19-88). A waste machine has beater means for shredding waste fiber material.

February 24, 1948

2,436,563. Dispersing carton. Robert de S. Couch, Earl C. Potter, and Edgerton A. Throckmorton; said Potter and said Throckmorton assignors to Container Corporation of America, Chicago, Ill. Filed March 29, 1945. 9 claims. (Cl. 299-10). A folded dispensing carton of the slide-box type.

2,436,555. Log debarking apparatus. Warren F. Daniell, assignor to Great Northern Paper Company, Millinocket, Maine. Filed July 15, 1944. 4 claims. (Cl. 144-208).

2,436,596. Adhesive and method of making the same. Henry F. Noakes and James R. Martyn, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Aug. 22, 1942. 4 claims. (Cl. 154-141). A laminated fabric comprises a paper having a grease or wax on the surface and firmly joined to a similar sheet by means of an intermediate film of a nonacid adhesive (emulsion of animal glue and a water-immiscible volatile solvent).

2,436,804. Process of recovering organic compounds. John S. Hill, assignor to Masonite Corporation, Laurel, Miss. Filed July 19, 1943. 11 claims. (Cl. 260-347). A process for manufacturing furfural and organic acids from the waste liquors of the Masonite process.

2,436,981. Pouring carton. John J. Sullivan, Arlington, Mass., assignor of one half to Lawrie L. Witter, Boston, Mass. Filed Oct. 5, 1944. 1 claim. (Cl. 229-17).

2,436,997. Cardboard box for eggs. Peter E. V. Jacobsen, Copenhagen, Denmark. Filed Sept. 10, 1938. 2 claims. (Cl. 229-29).

2,437,004. Steam head for drier drums. William J. Rutledge, Lucy, Tenn. Filed Sept. 9, 1946. 3 claims. (Cl. 34-124).

2,437,044. Process for tanning with chromiates of lignin sulfonic acids. Edwin A. Robinson and Ralph M. Beach, assignors to Nopco Chemical Company, Harrison, N. J. Filed Aug. 2, 1945. 6 claims. (Cl. 8-94.26). A tanning agent consists of a water-soluble dichromate, lignosulphonate acid, and formaldehyde, the quantity of dichromate being not more than 20%, based on the solids in the lignosulphonate.

2,437,072. Bag and bag handle construction. Norman H. Campbell, Toronto, Canada. Filed Aug. 31, 1945. 2 claims. (Cl. 229-68). The handle consists of a sheet of foldable stiff material of appreciable tensile strength.

2,437,079. Container. Frank R. Curtiss, New Haven, Conn. Filed July 11, 1944. 1 claim. (Cl. 229-16). A blank for a folding carton.

2,437,110. Package. Milton T. Marler, Los Angeles, Calif. Filed June 24, 1944. 1 claim. (Cl. 229-87).

2,437,114. Container. George A. Moore, assignor to National Biscuit Company, New York, N. Y. Filed Dec. 10, 1942. 2 claims. (Cl. 229-5.5).

2,437,157. Machine for setting up box blanks. Horace W. Gregoire, assignor to Oskar W. Wikstrom, Newton, Mass. Filed Nov. 2, 1944. 5 claims. (Cl. 93-49).

March 9, 1948

2,437,254. Drum drier for sheet material. John S. Hill, assignor to Masonite Corporation, Laurel, Miss. Filed July 30, 1943. 4 claims. (Cl. 34-116). The apparatus consists of opposed rotatable heated pressing rolls, a rotatable idler roll spaced from each pressing roll, and an endless belt (foraminous sheets of low heat conductivity and wire screens) extending around each pressing roll and idler roll, the screens being in contact with the heated rolls and the foraminous sheets in contact with the sheets of fibrous material.

2,437,643. Separation of neutral fat from tall oil. Alfred G. Houpt, assignor to American Cyanamid Company, New York, N. Y. Filed May 12, 1942. 2 claims. (Cl. 260-97.5). A method is given for the separation of the fatty acids, rosin acids, and neutral fraction of tall oil.

March 16, 1948

2,437,672. Method of treating bark. Herman W. Anway, assignor to Weyerhaeuser Timber Company, Longview, Wash. Filed Sept. 27, 1944. 6 claims. (Cl. 241-14). A method for the separation of bark into cork, fiber, and bark powder is given.

2,437,680. Moisture control device. Frank H. Cornelius, assignor to Armstrong Cork Company, Lancaster, Pa. Filed Jan. 11, 1945. 15 claims. (Cl. 91-48). The device consists of a housing enclosing the calender roll, means for injecting vapor into the housing, and controlling means responsive to the amount of vapor in the housing for controlling the injecting means.

2,437,693. Heat-sealing valve bag. Carl H. Hartman, assignor to St. Regis Paper Company, New York, N. Y. Filed Aug. 7, 1944. 4 claims. (Cl. 229-62.5). A means for heat sealing a multi-ply valve bag.

2,437,715. Consistency control. Clark E. Therp and Louis E. Anderson, assignors to Hawley Products Company, Chicago Heights, Ill. Filed Nov. 29, 1943. 9 claims. (Cl. 92-46). The method involves the use of a light absorption cell.

2,437,835. Collapsible carton. Harold Riege and Edwin C. Siewart, assignors to Marathon Corporation, Rothschild, Wis. Filed Sept. 9, 1944. 1 claim. (Cl. 229-33). A one-piece paper board blank designed for automatic high-speed machine assembly.

2,437,926. Container. Charles O. Ball, Gerald L. Swope, and Franklin D. Scott, assignors to Owens-Illinois Glass Company, Toledo, Ohio. Filed Feb. 2, 1945. 5 claims. (Cl. 229-17).

2,437,931. Process of indurating boards of fibrous materials. Hilding O. V. Bergström, Stocksund, Gustaf B. Heijmer, Enebyberg, and Karl G. Trobeck, Stockholm, Sweden. Filed Nov. 22, 1944. 2 claims. (Cl. 117-149). Oil-hardened fiber boards are prepared by impregnating the board with a distilate from tall oil, the distillate containing all the tall resin oil and a part of the tall fatty acid and heating the impregnated board to dry and harden the distillate and the board.

2,437,934. Closure. John G. Brink, assignor to Rand McNally & Company, Chicago, Ill. Filed April 14, 1945. 2 claims. (Cl. 229-84). A closure for a container and the like.

2,438,096. Stabilization of rosin sizes. Edward N. Poor and Kenneth L. Howard, assignor to American Cyanamid Company, New York, N. Y. Filed Aug. 21, 1945. 4 claims. (Cl. 106-238). A liquid rosin size is stabilized against crystallization by the addition of a mixture of approximately equal quantities of formaldehyde and an amine.

March 23, 1948

2,438,195. Pressure-sensitive adhesive tape. Hubert J. Tierney, assignor to Minnesota Mining & Manufacturing Company, St. Louis, Minn. Filed Dec. 5, 1946. 4 claims. (Cl. 117-122). The adhesive consists of a nontacky polyacrylate elastometer of the class consisting of methyl acrylate polymers, ethyl acrylate polymers, and copolymers of these acrylates and a normally tacky and pressure-sensitive nonoffsetting adhesive coating firmly united to the backing.

2,438,339. Laminated sheet and composition for coating laminate. Maurice Jacobs, assignor to Albert W. Clurman, New York, N. Y., as trustee. Filed July 16, 1942. 19 claims. (Cl. 154-45.9). sheets of fibrous materials are laminated with a mixture of 44 gallons sodium silicate (40-47° Bé.), 1½ gallons of high boiling mineral oil, 2.75 gallons tung oil (or other drying oil), a mica filler, and titanium dioxide and formed into a building element under high pressure.

2,438,430. Canister. Pasquale V. Di Cosmo and Matthew C. Ricciardi, assignors to The Canister Company, Phillipsburg, N. J. Filed June 19, 1942. 1 claim. (Cl. 93-55.1). A method for closing the end of a cylindrical container formed of chipboard or the like.

March 30, 1948

2,438,509. Manufacture of cardboard boxes. Henry P. McGovern, assignor to Dennison Manufacturing Company, Framingham, Mass. Filed Jan. 5, 1945. 8 claims. (Cl. 93-54.2).

2,438,787. Paper bag making machinery. John Nicholas, assignor to E. S. & A. Robinson, Limited, Bristol, England. Filed May 23, 1944. 5 claims. (Cl. 91-12).

2,438,788. Paper box forming apparatus. Frank D. Palmer, assignor to F. D. Palmer, Inc., Chicago, Ill. Filed Aug. 11, 1944. 2 claims. (Cl. 93-51).

2,438,789. Production of organic acids. Irwin A. Pearl, assignor to Sulphite Products Corporation, Appleton, Wis. Filed April 19, 1946. 2 claims. (Cl. 260-521). Aldehydes, such as vanillin, are oxidized to the corresponding acids by gold oxide in a hot aqueous solution of alkali metal hydroxide.

2,438,855. Process of modifying starch. Ralph W. Kerr and Norbert F. Schink, assignors to Corn Products Refining Company, New York, N. Y. Filed Feb. 25, 1942. 8 claims. (Cl 260-209). A method for modifying sweet potato starch for use as a gelling agent.

2,438,879. Carton for vacuum bottle fillers. Earl B. Whitehead, assignor to Atlantic Carton Corporation, Norwich, Conn. Filed April 15, 1946. 3 claims. (Cl. 229-39). A receptacle for a thermos bottle filler.